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Henry B. Ward
UNITED STATES COMMISSION OF FISH AND FISHERIES.

PART XIX.

REPORT

OF

THE COMMISSIONER

FOR

THE YEAR ENDING JUNE 30, 1893.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1895.

1.—THE FISHERIES OF THE PACIFIC COAST.

INTRODUCTORY.

Within the past five years the fisheries of the west coast of the United States have attracted more attention from the general public than those of any other region, and some of the questions which have arisen in connection therewith have been of great national and international importance. The principal branches which have been considered are the salmon industry and the fur-seal fishery. The vast interests depending on the preservation of the salmon supply have drawn to that subject the attention of Congress, as well as of the State legislatures; and the necessity for the protection of the fur seal on the high seas and at the rookeries has resulted in Congressional action and protracted diplomatic negotiations.

When, in 1889, the United States Commission of Fish and Fisheries completed a canvass of the fishing industry of the Pacific States, it acquired a full knowledge of the extent and importance of these fisheries for the first time in about ten years—that is, since the investigations for the Tenth Census. It was found that the advance in the industry since that time had been phenomenal in almost every branch, while a number of new features had in the meantime developed. The canvass of the fisheries of this extensive coast section was intrusted to Mr. W. A. Wilcox, who entered into the work with great zeal and brought a deep practical knowledge of the commercial fisheries to bear on the inquiry. The report based on Mr. Wilcox's investigations was printed as an appendix to the Report of the Commissioner of Fish and Fisheries for 1888. The paper was extensively distributed among the fishing interests of the west coast and was received with marked favor. Taking into consideration the rapid growth of this industry between 1879 and 1889, another investigation appeared opportune in 1892. Mr. Wilcox was again detailed for the work and has performed it in a manner satisfactory to the Commission and creditable to himself. The following report, prepared by him, represents the results of his inquiries.

The previous inquiry conducted by Mr. Wilcox covered all features of the industry, including full descriptions of methods, apparatus, fishing-grounds, etc., as well as comprehensive statistics. In the recent investigation special attention was devoted to the collection of detailed statistical data, and only such descriptive matter was obtained as was necessary to elucidate the statistics or record changes in the methods or conditions since the last canvass. Statistics for the years 1889 to 1892, inclusive, covering all phases of the fisheries and related shore

industries, were procured by the personal efforts of the agent. The commercial fisheries of the high seas, coasts, bays, and rivers prosecuted by fishermen of California, Oregon, and Washington were systematically and completely considered; and, in most cases, the statistics given represent actual records. As the firms prosecuting fishing in Alaska have their main offices in San Francisco or other cities of the Pacific States, Mr. Wilcox was able to obtain from them very satisfactory and approximately complete information for all the fisheries of Alaska in which white men are engaged. These data add greatly to the interest of the report and permit the presentation of statistics embracing the economic fisheries of the entire west coast of the United States.

In the vicinity of San Francisco, Mr. A. B. Alexander, fishery expert on the Fish Commission steamer *Albatross*, aided in the canvass. The statistics given for the year 1893 are the results of inquiries carried on by Mr. Alexander during the fall and winter of that year.

The years which have elapsed since the completion of the canvass of the west coast fisheries in 1889 have been characterized by great literary activity as regards the fishing industry. The following papers relating to fish and fisheries, issued by this Commission between 1889 and 1894, inclusive, which represent only a small part of the printed matter pertaining to this region which has appeared in Government reports, magazines, the public press, and State documents, are sufficient to show the interest taken in the subject by the national Fish Commission:

List of papers relative to the fish and fisheries of the Pacific Coast of the United States, published by the United States Fish Commission, from 1889 to 1894, inclusive.

Explorations of the fishing-grounds of Alaska, Washington Territory, and Oregon during 1888 by the United States Fish Commission steamer *Albatross*.

The transplanting of lobsters to the Pacific Coast of the United States.

Report upon the pearl fishery of the Gulf of California.

Report upon certain investigations relating to the planting of oysters in southern California.

Report on the salmon and salmon rivers of Alaska, with notes on the conditions, methods, and needs of the salmon fisheries.

The fishing-grounds of Bristol Bay, Alaska; a preliminary report upon the investigations of the United States Fish Commission steamer *Albatross* during the summer of 1890.

Report on the fisheries of the Pacific Coast of the United States.

Report on the investigations of the United States Fish Commission steamer *Albatross* for the year ending June 30, 1889.

The fishing vessels and boats of the Pacific Coast.

Report of the Commissioner of Fish and Fisheries relative to the salmon and salmon industries of Alaska.

Report upon the investigations of the United States Fish Commission steamer *Albatross* from July 1, 1889, to June 30, 1891.

Report of observations respecting the oyster resources and oyster fishery of the Pacific Coast of the United States.

Summary of fishery investigations conducted in North Pacific Ocean and Bering Sea from July 1, 1888, to July 1, 1892.

On the viviparous fishes of the Pacific Coast of North America.

Past and future of the fur seal.

Notes on the fisheries and fishery industries of Puget Sound.

Report upon the investigations of the United States Fish Commission steamer *Albatross* for the year ending June 30, 1892.

The salmon fisheries of the Columbia River basin, together with a report upon physical and natural-history investigations in the region.

The fishing industry is one of the most important enterprises of the west coast, and in some sections is more prominent than all other branches of business. Compared with the other coastal sections of the United States, the States of the Pacific Coast, including Alaska, now maintain fisheries that rank next to those of the New England and Middle Atlantic States in extent and importance. The value of the fishery products is greater than in the South Atlantic, Gulf, and Great Lakes States combined.

The inquiries of the Commission disclosed the fact that in 1892 the number of persons engaged in the fisheries of the Pacific States was 16,929, of whom 5,403 were in California, 4,332 in Oregon, 4,310 in Washington, and 2,884 in Alaska. The aggregate capital invested was found to be \$9,002,314. The shares of the different States were \$2,526,746 for California, \$2,272,351 for Oregon, \$1,593,567 for Washington, and \$2,609,650 for Alaska. The value of the catch was \$6,245,192, a sum representing the products as landed by the fishermen. Of this amount California is credited with \$3,022,991, Oregon with \$872,405, Washington with \$931,568, and Alaska with \$1,418,228.

The chief objects constituting the products of the west coast fisheries are salmon, cod, herring, flounders, rockfish, smelts, whales, fur seals, crabs, shrimps, and oysters. The salmon are nearly as valuable as all of the other products combined. Next to these in point of value are whalebone, oysters, fur-seal pelts, shrimp, cod, flounders, crabs, herring, whale oil, rockfish, and smelt.

Chief among the fishery industries of the Pacific States is the canning of salmon, which is prosecuted on a large scale in California, Oregon, Washington, and Alaska. In 1892, 56 canneries were in operation. These utilized 81,487,993 pounds of salmon, having a value of \$2,376,037, from which 1,118,098 cases of canned fish, each holding 48 one-pound cans or the equivalent, were prepared, the market value of the canned goods being \$5,294,032.

HUGH M. SMITH,
*Assistant in charge Division of
Statistics and Methods of the Fisheries.*

THE FISHERIES OF THE PACIFIC COAST.

BY WILLIAM A. WILCOX,

Statistical Agent, United States Commission of Fish and Fisheries.

GENERAL REMARKS.

In the years 1888 and 1889 the writer conducted a personal canvass of the fisheries of the Pacific Coast of the United States. Detailed statistics of the fishing industry were obtained, and descriptive notes on the history, apparatus, and methods of the fisheries, the abundance of the economic products, the fishing-grounds, etc., were secured. A report¹ embodying the results of that inquiry was published in the Report of the United States Fish Commissioner for 1888 and extensively distributed among the persons engaged in the fishing industry of that region.

In 1892 the rapidly growing importance of the various fisheries of the Pacific States, as determined by the investigations in 1888 and 1889, appeared to warrant further attention, and, accordingly, in August of that year, the writer was again detailed for duty on that coast for the purpose of making another investigation of the commercial aspects of the fishing industry. The inquiries began on the Columbia River and were extended over the entire coasts of Washington, Oregon, and California, the canvass being completed in May, 1893. The accompanying report is based on the observations made and information gathered during that time. The detailed references to products, apparatus, methods, fishing-grounds, etc., in the previous report make unnecessary at this time any similar discussion. The text in the present paper is, therefore, intentionally brief, and is either explanatory of the statistics or is addressed to changes that have occurred in the industry since the last investigation.

The years intervening between the two investigations will be recalled as those of more or less depression in nearly all kinds of business. A period of great commercial activity was followed by a marked decline in most branches, and many of the young cities of the west coast that had been giving employment to thousands of laborers and mechanics found their growth for the time checked. A general depression in other lines of trade has often had a beneficial effect on the fisheries. For lack

¹ Report on the Fisheries of the Pacific Coast of the United States. 269 pages; 49 plates of fishes, apparatus, boats, vessels, fishing-grounds, etc.

of other regular employment, men of small means have turned to the fisheries and thus have not only found work, but have assisted in furnishing the masses with cheap and wholesome food at a time when this was specially needed. This was the case at a number of places in the Pacific States during the later years covered by this report.

The previous report on the fisheries of this region contained a number of suggestions for the improvement of the fisheries. Among these were the much-needed use of ice, the adoption of cold storage, and the better care of fish by fishermen and dealers. In most cases the desired reforms were as conspicuous for their absence in 1892 as in 1889. Fresh fish continue to be sent to the city markets as they come from the water, seldom being eviscerated; and only a small amount of ice, if any, is used on them during transportation. When the market fishermen adopt the custom, which is almost universal in the East, of dressing and icing their catch before shipment, an increased demand and better prices may be expected, to say nothing of the advantage which will come to the consumer through having more wholesome food.

As during the previous investigations, the inquiries of the Commission were much facilitated by the courtesy of railroad, steamboat, and express companies in permitting access to their records. The fishing and canning firms of the coast took great interest in the agent's inquiries, and often extended much assistance, in addition to allowing the examination of records. The thanks of the Commission are due to the fishing interests of the west coast and also to the members of the State fish commissions for courtesies extended.

The field work on the Sacramento, San Joaquin, and Eel rivers and Monterey and San Francisco bays was ably assisted by Mr. A. B. Alexander, of the United States Fish Commission steamer *Albatross*.

CONDENSED STATISTICS OF THE INDUSTRY.

The extent of the fisheries of the Pacific Coast in 1892 is shown in the following tables, the figures for California, Oregon, Washington, and Alaska being separately given.

In the matter of persons engaged in the industry, California leads in the item of vessel fishermen, Washington in shore or boat fishermen, and Oregon in shore employees, such as factory hands, although Alaska leads in the number of shoresmen when all its canneries are in operation.

The aggregate investment in the fisheries of Alaska is greater than elsewhere, owing to the relatively expensive canneries there located and the large amount of working capital required to operate them. California takes first rank in the number, value, and tonnage of vessels employed, and also in the number of seines and gill nets used, but the seines in Washington and the gill nets in Oregon have a greater value. Oregon follows California in the amount of the general investment, and has important pound-net and wheel interests which are lacking elsewhere except in Washington.

Nearly half the value of the products of the fisheries of the coast represents the outcome of the fisheries of California. That State takes precedence in the catch of numerous market fishes, as well as cod, oysters, crabs, shrimp, fur seals, and whales. The salmon fishery is most valuable in Alaska, the yield of whose fisheries is second to those of California in value. Washington leads Oregon in the general importance of the fisheries, owing to the relatively important oyster fishery, which is insignificant in Oregon.

Persons employed in the fishing industry of the Pacific Coast of the United States in 1892.

How employed.	Alaska.	California.	Oregon.	Washington.	Total.
In vessel fisheries.....	331	1,825	117	376	2,649
In shore fisheries.....	1,020	2,968	2,705	3,082	9,775
On shore.....	1,533	610	1,510	833	4,586
Total.....	2,884	5,403	4,332	4,310	16,929

Vessels, boats, apparatus, shore property, and cash capital employed in the fisheries of the Pacific Coast of the United States in 1892.

Items.	Alaska.		California.		Oregon.		Washington.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.
Vessels.....	40	\$461,000	84	\$690,450	24	\$90,400	51	\$114,630
Tonnage.....	3,023		12,436.30		802.53		1,185.12	
Outfit.....		33,400		394,000		20,295		33,630
Boats.....	421	63,575	1,391	183,520	1,404	154,425	1,090	132,330
Apparatus:								
Seines.....	69	37,025	193	20,965	32	12,000	103	40,725
Gill nets and trammel nets.....	243	28,750	2,946	120,547	1,396	212,290	896	112,000
Pound nets and trap nets.....	16	13,300			247	173,400	187	134,700
Bag nets and paranzella nets.....			1,290	43,000				
Fyke nets and minor nets.....			49	980	50	250	30	600
Lines.....		4,050		15,954		10,520		5,830
Wheels.....					40	152,952	17	49,000
Tongs, hooks, etc.....						149		2,505
Other apparatus.....		500		13,341		2,050		6,217
Shore property.....		720,650		596,330		690,150		417,930
Cash capital.....		1,257,500		240,000		803,000		546,000
Total.....		2,609,650		2,536,746		2,272,351		1,569,567

SUMMARY.

Items.	No.	Value.	Items.	No.	Value.
Vessels.....	199	\$1,556,480	Apparatus—continued.		
Tonnage.....	14,510.48		Fyke nets and minor nets.....	129	\$1,630
Outfit.....		481,325	Lines.....		35,354
Boats.....	4,906	533,850	Wheels.....	57	181,852
Apparatus:			Tongs, hooks, etc.....		4,843
Seines.....	457	107,335	Other apparatus.....		22,108
Gill nets and trammel nets.....	5,471	474,157	Shore property.....		2,594,520
Pound nets and trap nets.....	430	311,300	Cash capital.....		2,852,500
Bag nets and paranzella nets.....	1,290	43,000	Total.....		9,002,314

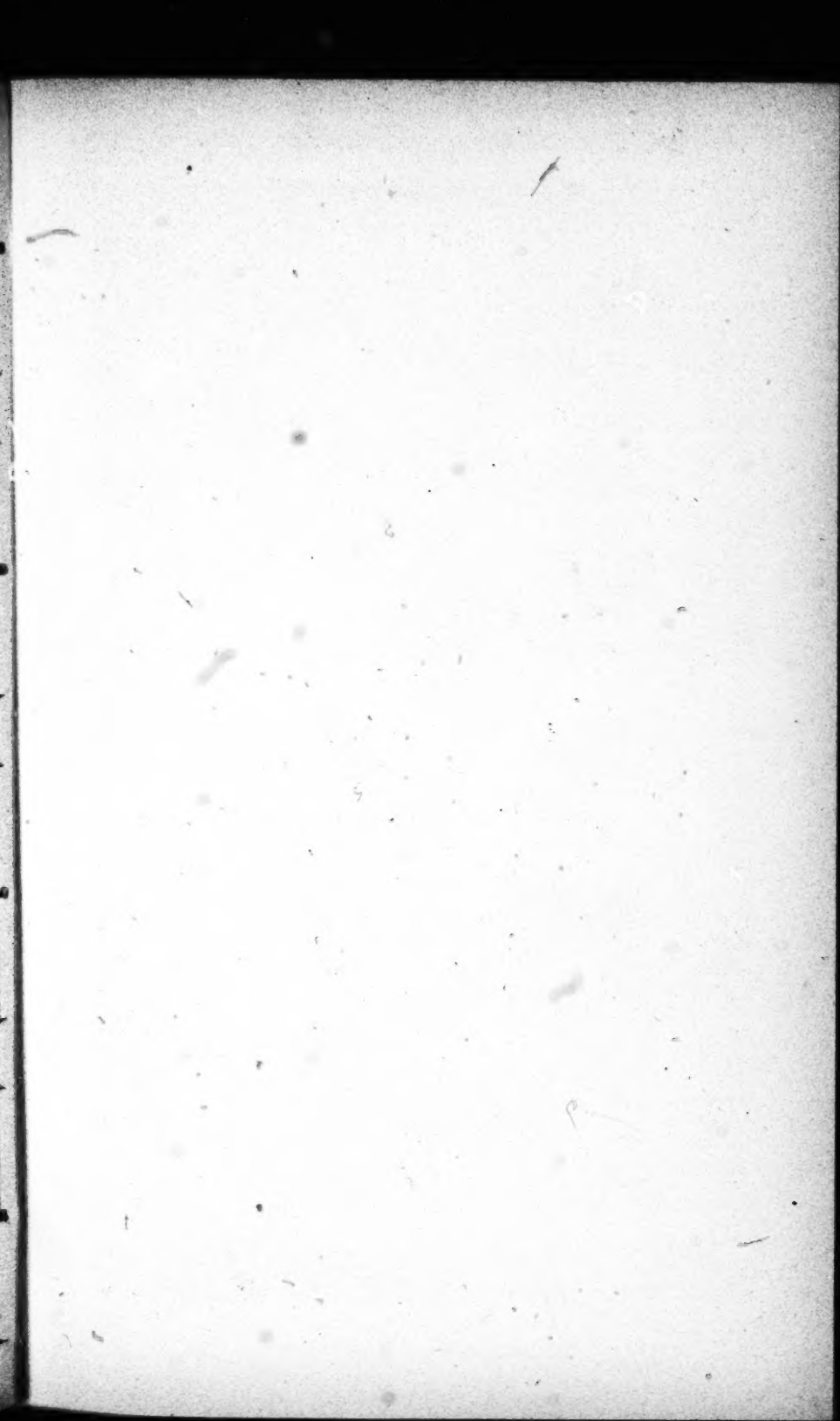
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Products of the fisheries of the Pacific Coast of the United States in 1892.

Species.	Alaska.		California.		Oregon.		Washington.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Anchovies.....			150,175	\$1,502				
Barracuda.....			326,804	12,530				
Bonito.....			249,323	9,409				
Carp.....			65,062	2,191				
Cod.....	2,319,835	\$55,582	2,274,565	86,864	26,304	\$1,315	538,000	\$31,500
Cultus-cod.....			230,670	7,070	10,000	400	350,000	6,875
Flounders.....			4,225,868	94,190	18,870	1,787	1,410,500	29,140
Halibut.....							617,113	6,817
Herring.....	18,700,000	\$2,900	4,498,887	58,796				
Mackerel.....			4,950,999	14,159				
Perch.....			335,117	10,927			63,140	1,300
Rockfish.....			1,829,657	51,785	86,115	4,255	163,000	4,515
Salmon.....	42,281,500	1,219,973	4,862,406	179,631	23,536,701	781,000	21,684,211	551,546
Sardines.....			752,904	15,237				
Sea bass.....			257,712	9,795				
Shad.....			536,494	14,372	100,000	3,270	103,350	3,183
Smelt.....			1,919,994	53,469			321,729	6,158
Striped bass.....			56,209	6,488				
Sturgeon.....			718,017	21,854	2,513,490	28,001	543,623	5,757
Yellow-tail.....			354,434	13,683				
Other fish.....			2,257,410	47,960			55,000	4,650
Abalone meats and shells.....			404,547	9,351				
Octopus and squid.....			374,622	29,639				
Clams, hard.....			479,500	6,449				
Clams, soft.....			2,017,300	30,433	49,560	825	684,000	5,700
Oysters.....			15,096,700	698,257	147,000	3,002	9,695,440	147,905
Mussels.....			2,880,000	12,000				
Crabs.....			2,682,230	102,900	4,125	495	79,000	3,550
Crawfish.....					20,000	3,000		
Shrimp and prawn.....			5,313,345	241,617			2,000	500
Spiny lobster.....			303,275	8,486				
Terrapin and frogs.....			45,625	8,050			13,125	5,250
Hair-seal and sea-lion pelts.....				2,267				
Fur-seal pelts.....		107,573		167,526		43,266		121,598
Sea-otter pelts.....		2,230		38,150		1,729		
Whale oil.....			1,574,843	62,123				
Whalebone.....			197,339	937,871				
Algae.....			28,325	1,133				
All other products.....			28,100	1,967			37,500	2,350
Total.....	62,151,835	1,418,228	57,838,466	3,022,961	28,521,105	872,405	36,757,287	931,568

SUMMARY.

Species.	Pounds.	Value.	Species.	Pounds.	Value.
Anchovies.....	150,175	\$1,502	Abalone meats and shells.....	404,547	\$9,351
Barracuda.....	326,804	12,530	Octopus and squid.....	374,622	29,639
Bonito.....	249,323	9,409	Clams, hard.....	479,500	6,449
Carp.....	65,062	2,191	Clams, soft.....	2,750,700	26,958
Cod.....	5,023,400	123,986	Oysters.....	25,141,140	848,314
Cultus-cod.....	615,974	15,260	Mussels.....	2,945,445	12,000
Flounders.....	4,430,445	97,771	Crabs.....	2,000,000	3,000
Halibut.....	1,439,370	20,927	Crawfish.....	5,313,345	242,317
Herring.....	23,803,990	95,513	Shrimp and prawn.....	303,275	8,486
Mackerel.....	360,390	14,159	Spiny lobster.....	58,750	18,000
Perch.....	400,257	12,230	Terrapins and frogs.....		
Rockfish.....	2,078,773	60,535	Hair-seal and sea-lion pelts.....		2,267
Salmon.....	94,314,820	2,781,550	Fur-seal pelts.....		439,865
Sardines.....	752,904	15,237	Sea-otter pelts.....		40,000
Sea bass.....	257,712	9,795	Whale oil.....	1,574,843	62,123
Shad.....	738,844	20,825	Whalebone.....	197,339	937,871
Smelt.....	2,341,650	53,469	Algae.....	28,325	1,133
Striped bass.....	56,209	6,488	All other products.....	65,000	4,317
Sturgeon.....	3,778,130	55,613			
Yellow-tail.....	354,434	13,683			
Other fish.....	2,312,410	52,010	Total.....	186,266,183	\$6,245,192





COD FISHING STATION, PIRATE COVE, SHUMAGIN ISLANDS, ALASKA.

Summary of the salmon-canning industry of the Pacific Coast of the United States in 1899.

States.	Persons employed.	No. of canneries.	Value.	Cash capital.	Total investment.	Salmon utilised.		Salmon canned.	
						Pounds.	Value.	Cases.	Value.
California.....	222	6	\$95,000	\$40,000	\$125,000	1,071,612	\$32,568	15,984	\$75,000
Oregon.....	1,510	22	526,000	835,000	1,433,000	28,432,711	798,238	294,498	2,085,072
Washington.....	851	13	369,750	520,000	889,750	18,449,870	424,208	226,758	1,162,569
Alaska.....	1,399	15	493,409	1,067,500	1,560,900	37,534,169	1,128,023	488,970	1,989,674
Total.....	3,982	56	1,556,159	2,462,500	4,018,650	81,487,969	2,376,037	1,118,098	5,294,602

CALIFORNIA.

GENERAL IMPORTANCE AND EXTENT OF THE INDUSTRY.

The fisheries of California are more important and varied than those of any other west coast State, as determined by the products taken. Considering the entire country, the rank of California as a fishing State is sixth; in the value of its products it is surpassed only by Massachusetts, Maryland, New York, Virginia, and New Jersey. The growth of the industry of late years has been marked, and the near future will doubtless witness an advance in the relative position of California at the expense of several of the east coast States named. The possibilities for the development of the inshore and offshore market fisheries and of other branches are believed to be great.

The special products which give to California the important rank it now occupies are oysters, shrimp, crabs, whales, fur seals, and the general food-fishes of the coast; in the yield of all these it surpasses the other States of this region. The salmon catch, while large as compared with the other products of the State, is insignificant when the remainder of the region is considered. The State owes much of its prominence in this connection to the extensive offshore vessel fisheries carried on for whales, cod, fur seals, etc., a branch of the industry which is of very small extent elsewhere on this coast.

The extent of the fisheries of this State in 1889, 1890, 1891, and 1892 is shown in the following tables, which relate, respectively, to persons employed, capital invested, and products taken:

Persons employed in the fisheries of California.

How engaged.	1889.	1890.	1891.	1892.
Vessel fisheries.....	1,147	1,412	1,509	1,825
Shore and boat fisheries.....	2,940	2,922	2,964	2,968
Canning industry and wholesale trade.....	597	847	878	610
Total.....	4,684	4,981	5,100	5,403

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Vessels, boats, apparatus, shore property, etc., employed in the fisheries of California.

Items.	1898.		1899.		1901.		1902.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.
Vessels.....	53	\$632,900	63	\$715,380	74	\$784,909	84	\$890,450
Tonnage.....	8,608.85		10,361.80		10,582.15		12,436.30	
Outfit.....		\$71,882		\$28,907		\$38,859		\$64,000
Boats.....	1,351	179,836	1,964	180,500	1,997	184,128	1,901	183,520
Apparatus:								
Seine.....	187	21,520	168	21,195	192	21,140	193	20,985
Gill and trammel nets.....	2,680	117,845	2,675	114,700	2,791	117,437	2,946	130,547
Bag nets and parane-								
rella nets.....	1,254	38,755	1,251	38,640	1,289	43,205	1,299	43,900
Fyke nets.....	49	980	49	980	49	980	49	980
Lines.....		11,098		13,238		14,230		15,954
Pots.....	183	250	196	273	200	278	203	283
Hoes, rakes, and tongs.....		681		679		683		680
Other apparatus.....		6,053		7,716		11,803		13,058
Shore property.....		459,806		480,037		537,528		596,330
Cash capital.....		344,500		303,000		248,000		246,000
Total.....		2,081,960		2,215,156		2,302,446		2,536,748

Products of the fisheries of California.

Species.	1898.		1899.		1901.		1902.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Anchovies, fresh.....	122,510	\$2,447	135,000	\$2,700	145,000	\$2,114	150,175	\$1,502
Atka mackerel, salted.....					54,980			
Barracuda, fresh.....	323,082	18,881	308,328	18,645	575,751	21,717	517,180	8,603
Barracuda, salted.....	117,028	4,427	115,849	4,054	119,042	4,246	109,614	3,837
Bonito, fresh.....	60,619	2,456	63,383	4,237	106,410	4,025	77,110	2,200
Bonito, salted.....	152,984	5,431	187,417	6,058	174,484	6,179	172,222	6,120
Carp, fresh.....	51,314	1,734	58,112	1,974	50,618	2,018	65,403	2,191
Cod, salted.....	1,463,434	36,587	1,782,679	44,587	2,047,911	51,308	2,274,505	66,884
Cultus-cod, fresh.....	131,044	4,736	167,758	6,283	213,618	7,030	230,070	7,070
Flounders, fresh.....	3,697,990	87,331	3,531,158	85,237	3,071,989	77,280	4,182,048	92,426
Flounders, salted.....	67,890	2,715	43,649	1,747	41,071	1,444	43,837	1,754
Herring, fresh.....	2,572,811	66,101	3,308,634	54,995	3,757,075	48,871	4,488,387	55,796
Kingfish, fresh.....	8,460	254	10,208	306	24,080	968	40,000	1,201
Mackerel, fresh.....	318,253	13,849	311,564	12,098	518,853	20,985	280,289	14,150
Porch, fresh.....	353,849	15,908	400,429	18,273	325,455	10,908	336,117	16,927
Rockfish, fresh.....	2,065,678	68,119	2,388,906	67,832	1,863,073	58,325	1,819,067	51,282
Rockfish, salted.....	43,553	1,806	30,716	1,354	29,219	1,258	9,070	458
Salmon, chinook, fresh.....	8,706,439	271,692	3,590,116	124,482	3,341,045	91,639	3,541,206	141,158
Salmon, chinook, salted.....							90,000	3,000
Salmon, silver, fresh.....							981,702	27,092
Salmon, silver, salted.....	435,000	17,334	167,000	6,680	118,200	4,448	30,000	1,800
Salmon, steelhead, fresh.....	440,921	10,500	363,999	7,007	315,721	6,220	310,442	6,084
Sardines, fresh.....	1,097,397	22,429	1,214,400	20,591	937,508	18,968	732,904	15,237
Sea bass, fresh.....	452,847	17,967	319,081	12,500	372,256	12,414	258,212	9,619
Sea bass, salted.....	2,580	125	6,581	261	21,301	1,022	6,500	185
Shad, fresh.....	263,788	10,633	318,140	11,891	445,000	15,856	226,494	14,072
Smelt, fresh.....	1,915,478	57,492	2,073,509	61,306	2,126,064	64,022	1,919,894	53,469
Striped bass, fresh.....	16,296	4,073	30,119	4,021	30,074	4,002	26,209	6,488
Sturgeon, fresh.....	698,650	21,250	612,585	18,989	727,551	22,215	16,017	21,854
Yellow-tail, fresh.....	188,272	7,536	112,563	4,817	160,981	6,501	163,037	6,071
Yellow-tail, salted.....	56,263	2,116	172,268	6,109	178,751	6,294	191,497	6,811
Other fish.....	1,717,861	33,277	1,995,101	36,022	1,902,993	37,071	2,217,410	46,156
Abalone meats and shells.....	210,079	8,099	263,783	5,553	392,781	7,573	404,547	8,251
Octopuses and squid.....	484,106	38,212	267,809	39,819	314,910	24,228	374,623	26,089
Clams, hard.....	970,710	6,232	511,980	5,975	450,800	5,400	479,500	6,449
Clams, soft.....	1,118,700	11,697	1,261,980	13,421	1,515,360	15,677	2,017,200	20,423
Oysters.....	12,969,000	571,525	12,929,500	592,137	12,267,800	618,455	15,008,700	696,237
Mussels.....	2,100,000	8,750	2,700,000	11,250	2,008,000	12,500	2,880,000	12,000
Crabs.....	2,080,400	79,045	2,090,000	63,125	2,248,100	90,400	2,982,320	102,900
Shrimp and prawn.....	5,535,322	253,617	5,822,008	296,589	4,892,940	233,001	5,218,241	241,817
Spiny lobster.....	268,458	7,327	278,210	7,747	272,245	7,008	305,275	8,486
Terrapin and frog.....	41,250	5,400	47,862	7,560	48,702	7,770	45,625	8,060
Hair-seal and sea-lion pelts.....		2,198		1,770		3,206		2,267
Fur-seal pelts.....		15,219		69,818		134,229		167,526
Sea-otter pelts.....		30,700		29,360		31,700		26,150
Whale oil.....	1,310,080	61,852	2,235,915	105,052	1,768,985	71,180	1,674,848	62,122
Whalebone.....	119,650	539,478	176,118	680,472	223,771	1,118,655	197,298	967,371
Seal oil.....	14,610	819	11,790	521	9,980	420		
Cod sounds.....						75	600	43
Cod oil.....						975	45	
Cod tongues.....	12,000	823	12,800	966	14,200	1,124	27,520	1,925
Algae.....	30,170	807	28,845	1,174	19,141	705	28,325	1,133
Total.....	53,505,065	2,405,317	53,320,194	2,502,630	52,482,906	2,031,420	57,328,469	2,022,991

In the foregoing figures, the products have, wherever practicable, been reduced to the common unit of a pound. In the following table such products as crabs, clams, oysters, etc., that are commonly sold on a different basis, and the pelts of marine mammals of which only the value is given in the above table, are shown by number, bushels, etc., as the case may be.

Species.	1889.	1890.	1891.	1892.
Crabs.....number..	676, 800	696, 067	782, 700	954, 107
Clams, hard.....bushels..	8, 158	7, 314	8, 449	8, 850
Clams, soft.....do.....	18, 645	21, 033	25, 256	23, 670
Mussels.....do.....	86, 000	45, 000	49, 968	48, 000
Oysters.....do.....	146, 150	151, 235	188, 120	178, 645
Hair-seal and sea-lion pelts.....number..	814	639	573	538
Fur-seal pelts.....do.....	1, 691	5, 818	8, 948	14, 710
Sea-otter pelts.....do.....	207	296	163	236
Whale oil.....gallons..	201, 344	298, 122	235, 198	206, 079

SHAD AND STRIPED BASS.

Among the most interesting and important information that may be presented regarding the fisheries of California is that concerning the remarkable success attending the introduction of shad and striped bass in the waters of the State. While much has already been said and written on this subject, the following data, representing the personal inquiries of the writer, are thought to contain some points of interest not before generally known.

Soon after the shad first began to be caught in the gill nets of the salmon fishermen of San Francisco Bay and Sacramento River, the fish were protected by State law, and the few examples occasionally smuggled into the San Francisco market sometimes brought the fishermen \$5 apiece. The rapid increase of the fish, however, soon made it apparent that further protection was unnecessary, and, accordingly, in 1889 the restrictions on capture were removed. In the year named the fish were so abundant that at times they sold for 10 cents per pound. In 1892 the catch had become so large that the price at which the fish were retailed in San Francisco was only 2 or 3 cents per pound, two fish often being sold for 25 cents. At times the San Francisco Bay fishermen were able to sell their catch at only 1 cent a pound. In other parts of the State, where only a small number of shad are taken incidentally during the salmon fishery, much higher prices are received in the local market.

The catch of shad in California waters is made chiefly in San Francisco Bay and Sacramento River. Monterey Bay continues to be the southern limit on the coast at which shad are found. More fish are taken on the north side of the bay by the Santa Cruz fishermen than elsewhere in that region. The mountain streams which enter the bay at Santa Cruz may be responsible for the presence of the shad only on that side of the bay. The fish is also taken in small numbers in all the

coast rivers north of San Francisco. In the vicinity of San Francisco the principal part of the shad yield is obtained between February and May, but the market fishermen of San Francisco take larger or smaller quantities during every month. San Francisco is the only city in the United States in the markets of which fresh shad just from the water may be found at any time in the year.

All of the shad taken in California are obtained with gill nets and haul seines used in other branches of the fisheries, no special apparatus being used and no special attention being given to their capture.

The following table is of interest as showing the rapid increase of shad during the comparatively few years which have elapsed since its introduction on the Pacific Coast. The fish have not only increased in numbers, but also show a gain in average weight and size which has been quite marked. While a few years ago the average weight was only $2\frac{1}{2}$ or 3 pounds, it is now somewhat over 4 pounds, and large numbers of specimens weighing 8 pounds or more are taken.

Counties.	1889.		1890.		1891.		1892.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Central Coast	94,723	\$3,089	102,318	\$4,089	108,111	\$4,320	130,364	\$4,181
Humboldt	300	30	350	35	160	16	100	10
Sacramento	13,224	793	15,990	958	17,516	1,051	21,579	1,295
San Francisco	61,073	2,443	118,943	3,808	230,460	8,914	343,749	4,855
Santa Cruz	20,364	810	24,880	985	30,120	1,305	53,000	1,400
Salas	73,200	2,888	67,993	2,316	58,739	2,350	87,702	3,681
Total	263,788	10,633	318,140	11,891	445,006	15,856	626,494	14,373

The striped bass of the Atlantic is justly classed as one of the best of the food-fishes of that coast. This fish was unknown on the Pacific up to its introduction a few years since through the agency of the United States Fish Commission. During the past four years it has steadily and largely increased in abundance and size, apparently thriving as well in its new home on the Pacific Coast as on the Atlantic seaboard. The principal catch is from about the first of October up to the middle of February, but a few are taken in all of the other months. Most of the fish are obtained from the salmon gill nets fished in San Francisco Bay and its several arms, and near the mouth of the Sacramento River.

The only apparatus used exclusively for striped bass are a few small purse seines. The seines are from 40 to 50 fathoms long, 3 fathoms deep, and cost \$125 each. Each seine is operated by four fishermen and two boats. The salmon gill nets, in which many bass are found, are 200 to 250 fathoms long, $4\frac{1}{2}$ fathoms deep, with a 6 to 8 inch mesh, and a value of \$150 to \$225 each. Most of the bass are taken in and near the mouth of the San Joaquin River.

The spawning-grounds of the fish are located in Middle River and Old River, both arms of the San Joaquin, and only a few miles above its mouth. These rivers have sandy and gravelly beds that are favorite

grounds for the striped bass during the spawning season. Many fish are taken from this section, but few, if any, are found further up the San Joaquin River.

The striped bass seems to make its home between the entrance to the Golden Gate and the short distance mentioned up the San Joaquin, a distance of some 100 to 125 miles. It does not go up the Sacramento River much, if any, above its mouth, none being caught by Sacramento fishermen near that city.

The striped bass vary in weight from 3 to 25 pounds, in some cases reaching 35 to 40 pounds; the average is 8 to 12 pounds. With the increase of the abundance of the fish and the augmented catch, both the consumer and the fisherman have reaped benefits; the marked decrease in price that favored the one was more than made up to the fisherman in his larger sales. The average price received by the fishermen was 40 cents a pound in 1889, 25 cents in 1890, 20 cents in 1891, and 12½ cents in 1892.

During the season of 1892, when fish were most abundant, the fishermen received only 8 cents a pound, and again, in times of scarcity, as high as 20 cents a pound. During 1888 the few bass caught brought a dollar a pound in city markets; in 1892 the retail price was 20 to 30 cents a pound. The yearly catch has been as follows:

Years.	Pounds.	Value.
1889.....	2,440	\$978
1890.....	9,790	2,440
1891.....	21,350	4,270
1892.....	43,700	5,337

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DETAILED STATISTICAL DATA.

In the following tables detailed statistics of the fisheries of California are given for the years 1889 to 1892 inclusive. The fishery interests of each county are separately indicated. The tables presented are: (1) The number of persons engaged in different capacities in the fishing industry; (2) the same designated by nativity and nationality; (3) the vessels, boats, apparatus, shore property, and cash capital devoted to the fisheries; (4) the quantity and value of products taken; (5) the same specified by the apparatus with which obtained. The statistical information is thus more complete than any heretofore offered for this State.

Table showing by counties the number of persons employed in the fisheries of California in 1889, 1890, 1891, and 1892.

Counties.	1889.					1890.				
	On ves- sels fishing.	On vessels trans- porting.	In shore fish- eries.	On shore, in can- neries, etc.	Total.	On ves- sels fishing.	On vessels trans- porting.	In shore fish- eries.	On shore, in can- neries, etc.	Total.
Central Costa			337	62	399			333	62	395
Del Norte			45	67	112			46	72	118
Humboldt			353	31	383			316	6	322
Los Angeles			165		165			175		175
Marin			236	89	325			233	87	320
Monterey			122		122			123		123
Orange			8		8			10		10
Sacramento			46	11	57			46	11	57
San Diego	83		72		155	90		72		162
San Francisco	1,000	24	797	263	2,174	1,353	24	799	270	2,443
San Luis Obispo			35		35			38		38
San Mateo			195		195			197		197
Santa Barbara			35		35	3		36		39
Santa Cruz			60		60			63		63
Shasta			9		9			9		9
Solano			390	74	454			378	39	417
Sonoma			18		18			19		19
Tehama			24		24			25		25
Ventura			4		4			4		4
Total	1,123	24	2,940	597	4,681	1,385	27	2,922	547	4,681

Counties.	1891.					1892.				
	On ves- sels fishing.	On vessels trans- porting.	In shore fish- eries.	On shore, in can- neries, etc.	Total.	On ves- sels fishing.	On vessels trans- porting.	In shore fish- eries.	On shore, in can- neries, etc.	Total.
Central Costa			330	62	392			330	62	392
Del Norte			47	45	92			48	70	118
Humboldt			314	6	320			320	6	326
Los Angeles	3		191	25	219	10		199	25	234
Marin			238	88	326			239	90	329
Monterey			121		121			121		121
Orange			12		12			13		13
Sacramento			45	11	56			44	11	55
San Diego	27		83		110	24		62		86
San Francisco	1,502	24	812	281	2,629	1,758	24	824	283	2,862
San Luis Obispo			38		38			38		38
San Mateo			204		204			200		200
Santa Barbara		3	37		40	3		37		40
Santa Cruz			62		62			60		60
Shasta			11		11			11		11
Solano			381	56	430			384	60	444
Sonoma			19		19			19		19
Tehama			26		26			26		26
Ventura			4		4			4		4
Total	1,532	27	2,964	576	5,109	1,796	27	2,908	610	5,400

Table showing by counties the nativity and nationality of the vessel fishermen of California in 1892.

Countries.	Los Angeles.		San Diego.		San Francisco.		Santa Barbara.	
	Nativ-ity.	Nation-ality.	Nativ-ity.	Nation-ality.	Nativ-ity.	Nation-ality.	Nativ-ity.	Nation-ality.
Africa.....					1			
Australia.....					10			
Belgium.....					6			
Canada.....					7	1		
China.....					28	8		
Denmark.....			6	6	3	3		
East Indies.....					44	20		
England.....					2			
France.....					132	312		
Germany.....					24	19		
Greece.....					131	86		
Holland.....					4			
Ireland.....					12	5		
Italy.....					37			
Japan.....					11			
Mexico.....					45	45		
New Brunswick.....					4	4		
Newfoundland.....					7			
New Zealand.....					1			
Norway.....					3			
Nova Scotia.....					125	73		
Portugal.....	3	2	18	12	20			
Russia.....					320	88		
St. Helena.....					34	22		
Sandwich Islands.....					6			
Scotland.....					31	28		
South America.....					43			
Spain.....					14	8		
Sweden.....					65	65		
Switzerland.....					129	71		
United States.....	7	8	6	12	6	4	3	3
United States Indians.....					612	1,014		
United States of Colombia.....					9	9		
West Indies.....					3			
Total.....	10	10	30	30	1,782	1,782	3	3

NOTE.—In this table the various provinces of the British Empire are shown separately as regards the nativity of the fishermen, but in the matter of nationality all are given under the general head of England.

Table showing the nativity of the shore or boat fishermen of California in 1892.

Counties.	Countries.													
	United States.	China.	Norway.	Austria.	Germany.	Spain.	Greece.	Italy.	American Indian.	Russia.	Sweden.	Portugal.	Sandwich Islands.	Mexico.
Contra Costa.....	1	150	2	6	8	2	16	137						
Del Norte.....	18							30						
Humboldt.....	110		23					69	28	23	30	35		
Los Angeles.....	53		3		1		16	54		2	28	43		
Marin.....	9	200		13				15	2					
Monterey.....		80	3			1		7			30	55		
Orange.....	6							6						
Sacramento.....		20			4			2				18		
San Diego.....	50											12		
San Francisco.....	6	300		111		61	73	218				56		
San Luis Obispo.....	5		2									30		1
San Mateo.....	200													
Santa Barbara.....	12	18		6				3						
Santa Cruz.....	18	7	2		4			28			1			
Shasta.....	11													
Solano.....	11		14		20		101	170		4	14	28		12
Sonoma.....	10							1						10
Tehama.....	26							4						
Ventura.....														
Total.....	948	975	48	135	33	64	205	718	66	34	73	233	18	1

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Table showing the nationality of the shore or boat fishermen of California in 1892.

Counties.	Countries.												Total.
	United States.	China.	Norway.	Austria.	Germany.	Spain.	Greece.	Italy.	American Indian.	Russia.	Sweden.	Portugal.	
Contra Costa.....	67	150	...	2	...	2	1	86	...	...	...	...	220
Del Norte.....	18	...	...	...	...	...	...	35	26	9	6	7	48
Humboldt.....	223	...	...	...	...	...	12	42	26	2	11	30	320
Los Angeles.....	100	...	...	...	...	...	...	15	2	2	11	30	160
Marin.....	11	200	...	11	...	...	...	3	2	...	...	...	220
Monterey.....	37	86	...	...	...	...	...	3	2	...	...	...	121
Orange.....	8	...	...	...	...	...	...	4	...	...	...	...	12
Sacramento.....	4	20	...	...	...	...	...	3	...	...	...	...	44
San Diego.....	54	...	...	...	...	...	...	...	...	...	...	...	62
San Francisco.....	220	200	...	62	...	30	41	112	...	...	...	...	324
San Luis Obispo.....	25	...	1	...	...	...	...	...	...	...	...	1	36
San Mateo.....	...	206	...	...	...	...	...	...	...	...	...	...	206
Santa Barbara.....	14	18	...	5	...	...	...	...	...	...	...	...	37
Santa Cruz.....	33	7	...	...	...	...	...	30	...	...	...	...	60
Shasta.....	11	...	...	...	...	...	...	...	...	...	...	...	11
Solano.....	138	...	...	...	...	...	71	145	...	...	...	...	284
Sonoma.....	10	...	...	...	...	...	...	1	8	...	...	...	19
Tehama.....	26	...	...	...	...	...	...	2	...	...	...	...	26
Ventura.....	2	...	...	...	...	...	...	...	...	...	...	...	4
Total.....	1,010	975	10	100	...	32	125	470	66	11	17	106	2,968

Table showing the nativity and nationality of shoremen and factory hands employed in the fishing industry of California in 1892.

Counties.	Nativity.						Nationality.					
	United States.	United States Indians.	China.	Sweden.	Norway.	Great Britain.	United States.	United States Indians.	China.	Sweden.	Norway.	Great Britain.
Contra Costa.....	12	...	50	...	...	...	12	...	50	...	...	...
Del Norte.....	15	55	...	...	...	...	15	55	...	...	...	...
Humboldt.....	6	...	...	...	...	...	6	...	...	...	...	...
Los Angeles.....	25	...	...	...	...	...	25	...	...	...	...	...
Marin.....	18	...	...	35	26	13	56	...	...	15	13	6
Sacramento.....	6	...	5	...	...	...	11	...	5	...	...	...
San Francisco.....	296	...	...	...	...	...	296	...	...	...	...	...
Solano.....	13	...	47	...	...	...	13	...	47	...	...	...
Total.....	379	55	102	35	26	13	419	55	102	15	13	6

Table showing by counties the apparatus and capital employed in the fisheries of California in 1889, 1890, 1891, and 1892.

Items.	Contra Costa.		Del Norte.		Humboldt.		Los Angeles.		Marin.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.
1889.										
Boats.....	166	\$23, 119	31	\$610	148	\$3, 020	90	\$17, 925	58	\$4, 040
Apparatus—shore fisheries:										
Seines.....			3	800	17	8, 100	4	400	7	550
Gill nets.....	75	16, 500	31	950	130	6, 600	108	4, 770	128	2, 280
Bag nets.....	193	4, 875					23	2, 250	250	6, 300
Fyke nets.....	24	480								
Trammel nets.....									13	180
Hoop nets.....					18	45				
Lines.....		480				50		780		
Pots.....							98	128		
Hoes and rakes.....						12				24
Minor apparatus.....										3
Shore property.....		24, 805		22, 000		5, 000		405		66, 100
Cash capital.....		66, 600		12, 500		30, 000				25, 000
Total.....		129, 610		37, 100		64, 827		26, 006		104, 487
1890.										
Boats.....	164	22, 970	30	887	142	2, 940	106	18, 573	58	4, 025
Apparatus—shore fisheries:										
Seines.....			3	800	15	4, 500	4	400	7	550
Gill nets.....	75	15, 500	30	918	115	6, 335	113	5, 020	126	2, 245
Bag nets.....	190	4, 600					23	2, 250	245	6, 125
Fyke nets.....	24	480								
Trammel nets.....									13	180
Hoop nets.....					18	45				
Lines.....		480				50		745		
Pots.....							105	125		
Hoes and rakes.....						12				22
Minor apparatus.....										3
Shore property.....		24, 805		22, 000		5, 000		415		66, 000
Cash capital.....		66, 600		17, 000		5, 000				25, 000
Total.....		129, 073		41, 905		23, 872		27, 638		104, 150
1891.										
Vessels fishing.....							1	800		
Tonnage.....							14. 41			
Outfit.....								400		
Boats.....	160	22, 945	30	885	141	2, 920	115	19, 380	58	4, 010
Apparatus—vessel fisheries:										
Lines.....								50		
Apparatus—shore fisheries:										
Seines.....			3	825	15	4, 500	4	400	7	550
Gill nets.....	70	15, 715	30	900	112	6, 160	130	5, 450	126	2, 245
Bag nets.....	188	4, 700					29	2, 700	252	6, 300
Fyke nets.....	24	480								
Trammel nets.....									12	180
Hoop nets.....					18	45				
Lines.....		525				40		910		
Pots.....							105	125		
Hoes and rakes.....						14				22
Minor apparatus.....										3
Shore property.....		24, 830		14, 000		5, 000		5, 675		66, 075
Cash capital.....		10, 000		12, 000		5, 000		10, 000		25, 000
Total.....		78, 753		28, 610		23, 090		45, 580		104, 385
1892.										
Vessels fishing.....							3	7, 000		
Tonnage.....							64. 21			
Outfit.....								1, 000		
Boats.....	164	22, 910	30	885	144	3, 520	131	26, 341	58	4, 080
Apparatus—vessel fisheries:										
Lines.....								150		
Apparatus—shore fisheries:										
Seines.....			3	850	14	4, 300	4	400	7	550
Gill nets.....	70	15, 625	30	900	119	6, 545	140	5, 980	125	2, 220
Bag nets.....	188	4, 700					28	2, 625	260	6, 250
Fyke nets.....	24	480								
Trammel nets.....									12	180
Hoop nets.....					18	45				
Lines.....		570				80		980		
Pots.....							105	125		
Hoes and rakes.....						17				25
Minor apparatus.....										3
Shore property.....		24, 830		22, 000		5, 000		5, 000		66, 000
Cash capital.....		20, 000		4, 000		5, 000				25, 000
Total.....		88, 675		32, 635		24, 407		48, 251		104, 514

Apparatus and capital employed in the fisheries of California, etc.—Continued.

Items.	Monterey.		Orange.		Sacramento.		San Diego.		San Luis Obispo.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.
1890.										
Vessels fishing.....							11	\$5,800		
Tonnage.....							137.81	4,425		
Outfit.....										
Boats.....	88	\$5,949	4	\$90	23	\$375	98	15,916	14	\$1,825
Apparatus—vessel fisheries:										
Lines.....								519		
Apparatus—shore fisheries:										
Seines.....	25	2,500	1	150	8	410	10	2,000		
Gill nets.....	354	8,060			13	975	12	1,200	40	5,000
Bag nets.....	5	200	1	75			2	1,000	2	300
Fyke nets.....					25	500				
Hoop nets.....					18	55				
Lines.....		1,245		40				487		100
Pots.....							25	38		
Hoos and rakes.....								20		
Minor apparatus.....								45		645
Shore property.....		2,165			1,585		5,700			370
Cash capital.....					6,000					
Total.....		20,140		355		9,880		37,221		5,145
1890.										
Vessels fishing.....							10	5,000		
Tonnage.....							105.23	3,825		
Outfit.....										
Boats.....	87	5,065	5	120	22	355	90	16,275	10	1,975
Apparatus—vessel fisheries:										
Lines.....								480		
Apparatus—shore fisheries:										
Seines.....	25	2,500	1	150	8	410	10	2,000		
Gill nets.....	357	8,227			12	900	12	1,200	38	1,910
Bag nets.....	5	200	1	75			2	1,000	2	300
Fyke nets.....					25	500				
Hoop nets.....					17	53				
Lines.....		1,287		65				490		110
Pots.....							25	38		
Hoos and rakes.....								20		
Minor apparatus.....								45		400
Shore property.....		2,230			1,578		5,700			800
Cash capital.....					6,000					
Total.....		20,439		410		9,798		36,073		5,195
1891.										
Vessels fishing.....							9	4,000		
Tonnage.....							89.16	3,500		
Outfit.....										
Boats.....	88	5,932	6	150	21	340	100	17,968	10	1,975
Apparatus—vessel fisheries:										
Lines.....								430		
Apparatus—shore fisheries:										
Seines.....	25	2,500	2	300	8	400	6	1,200		
Gill nets.....	353	8,075			10	750	10	1,000	38	1,910
Bag nets.....	5	200	2	150			2	1,500	2	300
Fyke nets.....					25	500				
Hoop nets.....					10	58				
Lines.....		1,360		75				585		120
Pots.....							25	38		
Hoos and rakes.....								25		
Minor apparatus.....								40		400
Shore property.....		2,450			1,550		5,700			700
Cash capital.....					6,000					
Total.....		20,517		675		9,598		36,574		5,411
1892.										
Vessels fishing.....							10	5,150		
Tonnage.....							95.91	3,900		
Outfit.....										
Boats.....	84	5,800	6	150	21	340	77	12,844	16	1,975
Apparatus—vessel fisheries:										
Lines.....								480		
Apparatus—shore fisheries:										
Seines.....	25	2,500	2	300	8	400	6	900		
Gill nets.....	350	8,000			10	750	8	800	40	2,000
Bag nets.....	3	200	2	150			4	2,000	2	300
Fyke nets.....					25	500				
Hoop nets.....					20	60				
Lines.....		1,395		75				580		140
Pots.....							25	38		
Hoos and rakes.....								22		
Minor apparatus.....								75		400
Shore property.....		2,500			1,550		5,700			800
Cash capital.....					6,000					
Total.....		20,305		675		9,000		32,969		5,415

Apparatus and capital employed in the fisheries of California, etc.—Continued.

Items.	San Mateo.		Santa Barbara.		Santa Cruz.		Shasta.		Solano.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.
1889.										
Boats	43	\$2,415	23	\$2,775	43	\$5,040	3	\$60	259	\$33,765
Apparatus—shore fisheries:										
Seines			3	600	1	75	3	300		
Gill nets			17	1,600	113	2,120			186	36,090
Bag nets	328	8,300			8	1,100				
Trammel nets					80	1,625				
Lines				70		190				2,016
Pots			60	90						
Minor apparatus				300						
Shore property		7,800		410		526		50		30,000
Cash capital										49,000
Total		18,415		5,935		10,976		410		134,871
1890.										
Vessels transporting			1	5,000						
Tonnage			14.90							
Outfit				300						
Boats	47	2,400	23	2,880	48	4,900	3	60	359	33,765
Apparatus—shore fisheries:										
Seines			3	600	1	75	3	300		
Gill nets			19	1,900	90	1,945			186	36,090
Bag nets	325	8,140		1,900	8	1,025				
Trammel nets					74	1,410				
Lines				70		190				2,140
Pots			66	100						
Minor apparatus				300						
Shore property		7,900		465		774		50		30,000
Cash capital										15,000
Total		18,440		11,615		10,319		410		108,905
1891.										
Vessels transporting			1	4,300						
Tonnage			11.92							
Outfit				440						
Boats	48	2,440	23	3,150	54	4,500	4	75	363	34,250
Apparatus—shore fisheries:										
Seines			3	600	1	75	4	400		
Gill nets			20	1,000	104	1,920			192	37,050
Bag nets	330	8,300			9	1,325				
Trammel nets					75	1,425				
Lines				68		207				2,300
Pots			70	105						
Minor apparatus				300						
Shore property		7,900		480		988		50		50,000
Cash capital										8,000
Total		18,600		10,443		10,410		525		131,500
1892.										
Vessels transporting			1	4,300						
Tonnage			11.92							
Outfit				300						
Boats	50	2,500	25	3,150	59	4,485	4	70	363	34,425
Apparatus—shore fisheries:										
Seines			3	600	1	75	4	400		
Gill nets			20	1,000	100	1,805			192	37,050
Bag nets	335	8,375			9	1,300				
Trammel nets					71	1,356				
Lines				75		220				2,376
Pots			73	110						
Minor apparatus				300						
Shore property		8,000		500		950		50		50,000
Cash capital										8,000
Total		18,875		10,335		10,171		520		131,851

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Apparatus and capital employed in the fisheries of California, etc.—Continued.

Items.	San Francisco.		Sonoma.		Tehama.		Ventura.		Total.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.
1899.										
Vessels fishing.....	28	\$598,000							47	\$603,900
Tonnage.....	8,370.55								8,398.26	
Outfit.....		388,397								388,397
Vessels transporting.....	5	25,000							5	25,000
Tonnage.....	338.49								338.49	
Outfit.....		1,600								1,600
Boats.....	350	60,000	8	\$500	10	\$180	4	\$700	1,351	175,326
Apparatus—vessel										
fisheries:									5	960
Parasols nets.....	5	960								798
Lines.....		3,250								3,250
Other apparatus.....										
Apparatus—shore										
fisheries:									187	21,850
Seines.....	90	7,300	2	150	13	1,285			2,273	110,805
Gill nets.....	1,170	27,000	6	600			3	150	1,249	37,805
Bag nets.....	438	19,975							49	900
Fyke nets.....									407	8,900
Trawl nets.....	315	8,175							36	100
Hoop nets.....							10			11,138
Lines.....		8,700	40						183	256
Pots.....									50	500
Tongs.....	50	500								161
Hoes and rakes.....		125								2,705
Minor apparatus.....		1,710								480,804
Shore property.....		287,800				250				344,500
Cash capital.....		108,000								
Total.....		1,471,000		1,290		1,715		800		2,061,000
1890.										
Vessels fishing.....	48	\$603,300							56	\$603,300
Tonnage.....	9,803.35								9,908.57	
Outfit.....		323,403								323,407
Vessels transporting.....	5	25,000							7	30,000
Tonnage.....	338.43								353.23	
Outfit.....		2,600								2,600
Boats.....	243	60,000	8	540	10	180	4	700	1,264	180,000
Apparatus—vessel										
fisheries:									5	960
Parasols nets.....	5	960								883
Lines.....		3,250								5,250
Other apparatus.....										
Apparatus—shore										
fisheries:									188	21,105
Seines.....	92	7,300	2	150	14	1,400			2,290	108,100
Gill nets.....	1,123	26,500	6	600			3	150	1,248	37,000
Bag nets.....	443	19,975							49	900
Fyke nets.....									398	6,540
Trawl nets.....	300	8,150							35	100
Hoop nets.....							10			12,378
Lines.....		8,079	43						156	273
Pots.....									50	500
Tongs.....	50	500								179
Hoes and rakes.....		125								2,800
Minor apparatus.....		1,030								490,037
Shore property.....		332,000				250				308,000
Cash capital.....		175,000								
Total.....		1,685,306		1,383		1,820		800		2,215,155

Apparatus and capital employed in the fisheries of California, etc.—Continued.

Items.	San Francisco.		Sonoma.		Tehama.		Ventura.		Total.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.
1881.										
Vessels fishing	55	\$739,500	.....	.....	.....	.....	.....	.....	65	\$744,000
Tonnage	9,942.45	.....	.....	.....	.....	.....	.....	.....	10,045.97	325,419
Output	5	331,519	.....	.....	.....	.....	.....	.....	.....	40,300
Vessels transporting	5	35,500	.....	.....	.....	.....	.....	.....	536.18	.....
Tonnage	524.36	.....	.....	.....	.....	.....	.....	.....	.....	2,549
Output .....	.....	3,100	.....	.....	.....	.....	.....	.....	.....	104,123
Boats	248	61,650	8	\$550	11	\$195	4	\$720	1,397	.....
Apparatus—vessel fisheries:	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Parasella nets	15	2,800	.....	.....	.....	.....	.....	.....	15	2,850
Lines .....	.....	419	.....	.....	.....	.....	.....	.....	.....	890
Other apparatus .....	.....	9,250	.....	.....	.....	.....	.....	.....	.....	9,250
Apparatus—shore fisheries:	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Seine	98	7,840	2	150	14	1,400	.....	.....	192	21,140
Gill nets	1,185	27,800	6	800	.....	.....	.....	.....	2,386	110,879
Bag nets	453	15,000	.....	.....	.....	.....	2	150	1,374	59,248
Fyke nets .....	.....	.....	.....	.....	.....	.....	.....	.....	49	890
Trawl nets	318	5,347	.....	.....	.....	.....	.....	.....	465	6,932
Hoop nets .....	.....	.....	.....	.....	.....	.....	.....	.....	37	193
Lines .....	.....	7,302	.....	50	.....	.....	12	.....	.....	12,321
Pots .....	.....	.....	.....	.....	.....	.....	.....	.....	200	279
Tongs	50	500	.....	.....	.....	.....	.....	.....	50	500
Hoes and rakes .....	.....	125	.....	.....	.....	.....	.....	.....	.....	183
Minor apparatus .....	.....	1,697	.....	.....	.....	.....	.....	.....	.....	2,450
Shore property .....	.....	352,500	.....	.....	.....	250	.....	.....	.....	537,538
Cash capital .....	.....	172,000	.....	.....	.....	.....	.....	.....	.....	245,000
Total .....	.....	1,773,989	.....	1,350	.....	1,845	.....	882	.....	2,302,448
1882.										
Vessels fishing	63	\$34,500	.....	.....	.....	.....	.....	.....	76	\$46,050
Tonnage	11,792.65	.....	.....	.....	.....	.....	.....	.....	11,952.77	.....
Output	6	395,600	.....	.....	.....	.....	.....	.....	7	301,500
Vessels transporting	6	30,500	.....	.....	.....	.....	.....	.....	.....	43,000
Tonnage	471.61	.....	.....	.....	.....	.....	.....	.....	482.53	.....
Output .....	.....	2,300	.....	.....	.....	.....	.....	.....	.....	2,500
Boats	252	65,600	8	850	11	195	4	750	1,391	192,530
Apparatus—vessel fisheries:	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Parasella nets	20	3,800	.....	.....	.....	.....	.....	.....	20	3,800
Seine	1	400	.....	.....	.....	.....	.....	.....	1	400
Lines .....	.....	494	.....	.....	.....	.....	.....	.....	.....	1,124
Other apparatus .....	.....	10,450	.....	.....	.....	.....	.....	.....	.....	10,450
Apparatus—shore fisheries:	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Seine	102	5,100	2	150	14	1,400	.....	.....	192	20,565
Gill nets	1,296	30,070	6	800	.....	.....	.....	.....	2,506	113,121
Bag nets	454	14,050	.....	.....	.....	.....	2	150	1,379	46,160
Fyke nets .....	.....	.....	.....	.....	.....	.....	.....	.....	49	890
Trawl nets	357	5,890	.....	.....	.....	.....	.....	.....	440	7,428
Hoop nets .....	.....	.....	.....	.....	.....	.....	.....	.....	38	195
Lines .....	.....	8,294	.....	50	.....	.....	15	.....	.....	14,820
Pots .....	.....	.....	.....	.....	.....	.....	.....	.....	202	253
Tongs	50	500	.....	.....	.....	.....	.....	.....	50	500
Hoes and rakes .....	.....	125	.....	.....	.....	.....	.....	.....	.....	189
Minor apparatus .....	.....	1,725	.....	.....	.....	.....	.....	.....	.....	2,500
Shore property		495,000				250				506,330
Cash capital		180,000								245,000
Total		1,962,358		1,350		1,845		885		2,538,746

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Table showing by counties and species the yield of the fisheries of California in 1880.

Species.	Contra Costa.		Del Norte.		Humboldt.		Los Angeles.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Barracuda, fresh.....							88,891	\$3,454
Carp, fresh.....	11,914							
Outlets-od, fresh.....					31,040	\$735		
Flounders, fresh.....	256,092	3,850			132,440	3,130	177,629	7,112
Herring, fresh.....	192,519	2,838			10,000	300	61,000	2,440
Mackerel, fresh.....							117,423	4,997
Perch, fresh.....					30,180	504	17,200	688
Rockfish, fresh.....					28,115	785	45,954	1,828
Salmon, chinook, fresh.....	3,195,747	127,830	214,875	\$5,078				
Salmon, silver, fresh.....			180,205	3,543	1,178,515	37,293		
Salmon, silver, salted.....					435,000	17,534		
Salmon, steelhead, fresh.....			48,750	728	802,171	9,778		
Sardines, fresh.....							18,367	880
Sea bass, fresh.....	86,722	3,680					11,100	444
Shad, fresh.....	130,012	2,070						
Smelt, fresh.....	12,778	3,443			20,500	738	145,361	5,812
Striped bass, fresh.....	350,410	10,513						
Sturgeon, fresh.....							30,000	1,220
Yellow-tail, fresh.....							61,774	2,470
Other fish, fresh and salted.....	300,364	3,221					19,810	452
Abalone meats and shells.....					43,750	987		
Clams, hard.....					10,800	270		
Clams, soft.....					88,400	3,000		
Crabs.....								
Shrimp and prawn.....	919,221	41,760						
Spiny lobster.....							108,000	2,815
Hair-seal and sea-lion pelts.....								580
Seal oil.....							7,300	280
Total.....	8,373,277	199,819	456,830	10,349	2,384,781	74,893	910,581	34,985

Species.	Marin.		Monterey.		Orange.		Sacramento.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Barracuda, fresh.....			28,056	\$1,980	2,000	\$80		
Carp, fresh.....							30,360	\$1,377
Flounders, fresh.....	407,953	\$7,840	278,490	5,563	5,481	193		
Flounders, salted.....			67,880	2,715				
Herring, fresh.....	337,442	7,060			4,845	170		
Mackerel, fresh.....			75,040	3,753	3,000	120		
Perch, fresh.....	80,997	3,600			2,330	93	4,382	235
Rockfish, fresh.....			1,112,753	22,207	6,000	240		
Rockfish, salted.....			30,750	1,230				
Salmon, chinook, fresh.....	25,000	1,000	10,000	608			161,540	10,007
Sardines, fresh.....					2,000	80		
Sea bass, fresh.....	33,142	1,320			3,000	120		
Shad, fresh.....	260,150	4,840	83,258	3,330	17,805	710	13,224	793
Smelt, fresh.....								
Sturgeon, fresh.....	30,240	1,200					4,889	280
Yellow-tail, fresh.....					5,000	200		
Other fish, fresh and salted.....	248,087	3,573	19,283	880	2,000	80	358,728	4,921
Abalone meats and shells.....			3,850	73				
Octopus and squid.....			468,000	37,440				
Clams, hard.....	22,000	600						
Clams, soft.....	11,100	100						
Shrimp and prawn.....	1,225,626	55,003						
Terrapin and frogs.....	11,250	3,000						
Algae.....			5,800	232				
Total.....	2,721,349	91,444	2,183,255	79,581	58,251	2,067	417,958	18,146

Species.	Santa Cruz.		Shasta.		Solano.		Sonoma.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Barracuda, fresh.....	5,000	\$240						
Flounders, fresh.....	69,074	2,737					5,500	\$230
Mackerel, fresh.....	9,845	458						
Rockfish, fresh.....	139,528	4,945					3,375	135
Rockfish, salted.....	3,215	211						
Salmon, chinook, fresh.....	13,552	610	28,700	\$720	1,973,400	\$78,936	20,810	1,610
Shad, fresh.....	20,364	810			72,306	2,888		
Smelt, fresh.....	18,600	745						
Striped bass, fresh.....					900	240		
Sturgeon, fresh.....					222,794	6,984		
Total.....	366,078	10,786	28,700	720	2,278,300	89,048	35,685	1,965

Yield of the fisheries of California in 1889—Continued.

Species.	San Diego.		San Luis Obispo.		San Mateo.		Santa Barbara.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Barracuda, fresh.....	157,700	\$0,312	25,116	\$0.95			65,370	\$3,280
Barracuda, salted.....	97,106	3,300	1,000	50			19,530	978
Bonito, fresh.....	45,030	1,602	1,500	75			22,500	1,174
Bonito, salted.....	151,319	5,296					2,615	125
Flounders, fresh.....	7,050	252	16,360	716	748,953	\$11,403	7,775	385
Herring, fresh.....	24,960	966						
Mackerel, fresh.....	10,000	401	95,070	3,550			4,945	249
Perch, fresh.....	22,776	913						
Rockfish, fresh.....	35,000	1,400	79,000	3,085				
Rockfish, salted.....			4,000	200				
Sardines, fresh.....	7,000	280					4,500	225
Sea bass, fresh.....	11,748	470	52,180	1,820			11,000	505
Sea bass, salted.....			2,500	125				
Smelt, fresh.....	12,110	485	26,000	900	218,010	2,485	6,190	310
Yellow-tail, fresh.....	122,894	4,490					20,394	1,205
Yellow-tail, salted.....	53,081	1,859					5,182	268
Other fish, fresh and salted.....	63,300	2,520			315,005	4,504	10,387	948
Abalone meats and shells.....	27,540	1,087					229,070	8,677
Clams, hard.....	420,000	3,000						
Shrimp and prawn.....					1,532,034	60,616		
Spiny lobster.....	48,158	1,303					110,300	3,900
Hair-seal and sea-lion pelts.....		1,000		195				425
Sea-otter pelts.....								3,000
Whale oil.....			30,000	1,000				
Seal oil.....			3,210	107				
Algae.....							14,370	575
Total.....	1,316,863	37,195	337,906	12,756	2,815,492	80,008	554,014	23,161

Species.	San Francisco.		Tehama.		Ventura.		Total.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Anchovies, fresh.....	122,510	\$2,447					122,510	\$2,447
Barracuda, fresh.....					10,663	\$490	383,068	10,261
Barracuda, salted.....							117,036	4,427
Bonito, fresh.....					10,560	405	80,619	3,456
Bonito, salted.....							153,954	5,421
Carp, fresh.....							51,214	1,734
Cod, salted.....	1,468,424	56,587					1,468,424	56,587
Cultus-cod, fresh.....	110,004	4,001					131,044	4,736
Flounders, fresh.....	1,542,040	43,600			2,190	87	3,037,900	87,931
Flounders, salted.....							67,680	2,715
Herring, fresh.....	1,942,225	82,325					2,972,511	66,101
Kingfish, fresh.....	8,400	254					8,400	254
Mackerel, fresh.....							315,253	12,249
Perch, fresh.....	187,126	9,856					353,549	15,906
Rockfish, fresh.....	630,742	28,066			10,211	408	2,065,078	60,119
Rockfish, salted.....							42,553	1,606
Salmon, chinook, fresh.....	1,003,569	40,140	118,145	\$2,955			6,768,430	271,082
Salmon, silver, fresh.....							1,380,730	40,836
Salmon, silver, salted.....							435,000	17,834
Salmon, steelhead, fresh.....							440,921	10,506
Sardines, fresh.....	1,070,000	21,400					1,097,097	22,429
Sea bass, fresh.....	825,000	19,000			4,700	188	452,847	17,967
Sea bass, salted.....							2,500	125
Shad, fresh.....	61,072	2,443					265,788	10,823
Smelt, fresh.....	958,562	32,487					1,915,478	67,692
Striped bass, fresh.....	1,500	390					16,596	4,075
Sturgeon, fresh.....	75,820	2,260					985,620	21,260
Yellow-tail, fresh.....					4,962	185	188,372	7,328
Yellow-tail, salted.....							58,243	2,110
Other fish, fresh and salted.....	274,026	10,120			6,733	262	1,717,951	53,377
Abalone meats and shells.....	30,000	600					310,079	6,080
Octopus and squid.....	18,100	772					484,100	26,212
Clams, hard.....	74,900	1,606					870,710	9,252
Clams, soft.....	1,098,800	11,518					1,118,700	11,897
Oysters.....	12,300,000	571,523					12,300,000	571,523
Mussels.....	2,100,000	8,750					2,100,000	8,750
Crabs.....	1,944,000	76,945					2,030,490	79,045
Shrimp and prawn.....	1,858,439	86,520					5,635,122	253,617
Spiny lobster.....							266,452	7,327
Terrapin and frogs.....	30,000	2,400					41,250	5,400
Hair-seal and sea-lion pelts.....								2,196
Fur-seal pelts.....		15,219						15,219
Sea-otter pelts.....		27,700						26,700
Whale oil.....	1,480,080	60,952					1,510,080	61,002
Whalebone.....	119,450	820,478					119,450	820,478
Cod tongues.....	12,000	882					12,000	882
Seal oil.....							14,610	619
Algae.....							30,170	397
Total.....	31,205,102	1,084,561	118,145	2,965	49,698	2,005	52,505,065	2,485,217

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Table showing by counties and species the yield of the fisheries of California in 1890.

Species.	Contra Costa.		Del Norte.		Humboldt.		Los Angeles.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Barracuda, fresh.							142,414	\$5,097
Carp, fresh.	12,300	\$956						
Cultus-cod, fresh.					30,290	\$710		
Flounders, fresh.	280,650	4,383			184,113	3,807	187,543	7,503
Herring, fresh.	214,129	2,212			11,150	229	46,000	1,920
Mackerel, fresh.							189,174	8,467
Perch, fresh.					21,610	529	19,800	800
Rockfish, fresh.					24,908	748	57,740	2,310
Salmon, chinook, fresh.	1,423,880	86,955	345,250	\$18,357				
Salmon, silver, fresh.			286,975	4,227				
Salmon, silver, salted.					187,000	8,080		
Salmon, steelhead, fresh.			51,675	777	311,624	6,230		
Sardines, fresh.							24,705	961
Sea bass, fresh.							14,244	574
Sea bass, salted.							2,781	151
Shad, fresh.	102,216	4,080			250	35		
Smelt, fresh.	148,700	2,231			28,180	704	182,200	7,286
Striped bass, fresh.	15,715	8,143						
Sturgeon, fresh.	235,523	7,066						
Yellow-tail, fresh.							26,280	1,530
Other fish, fresh and salted.	221,150	3,456					107,677	4,308
Abalone meats and shells.							800	34
Clams, hard.					43,000	800		
Clams, soft.					12,000	300		
Crabs.					96,000	3,125		
Shrimp and prawn.	967,947	43,963						
Spiny lobster.							107,000	2,810
Hair-seal and sea-lion pelts.								225
Seal oil.							4,800	193
Total.	3,027,087	128,784	647,500	15,361	1,827,631	55,145	1,099,648	42,738

Species.	Marin.		Monterey.		Orange.		Sacramento.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Barracuda, fresh.			18,658	\$1,120	3,000	\$130		
Carp, fresh.							45,904	\$1,908
Cultus-cod, fresh.					2,906	350		
Flounders, fresh.	629,309	\$12,068	128,063	2,463				
Flounders, salted.			43,645	1,747				
Herring, fresh.	988,981	7,654	2,920	196				
Mackerel, fresh.			41,512	2,098	6,000	240		
Perch, fresh.	31,997	2,280			5,080	190	5,405	358
Rockfish, fresh.			1,245,078	24,902	15,000	600		
Rockfish, salted.			18,200	728				
Salmon, chinook, fresh.	22,110	880	8,770	526			148,540	10,180
Sardines, fresh.					5,035	200		
Sea bass, fresh.	30,305	1,200			5,000	200		
Shad, fresh.							15,000	958
Smelt, fresh.	278,080	6,250	107,184	4,287	20,715	528		
Striped bass, fresh.							54	8
Sturgeon, fresh.	38,170	1,820					2,260	242
Yellow-tail, fresh.					10,000	400		
Other fish, fresh and salted.	278,100	4,078	24,496	881	2,000	80	212,629	5,123
Abalone meats and shells.			4,400	83				
Clams, hard.	30,450	965						
Clams, soft.	10,000	101						
Shrimp and prawn.	1,290,000	58,643						
Terrapin and frogs.	12,563	3,350						
Algae.			6,500	280				
Total.	3,071,979	90,079	1,645,840	30,226	80,282	3,540	429,552	18,458

Species.	Santa Cruz.		Shasta.		Solano.		Sonoma.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Barracuda, fresh.	3,731	\$183						
Flounders, fresh.	77,770	3,110					6,190	\$248
Mackerel, fresh.	16,495	678						
Rockfish, fresh.	174,905	8,956					4,315	180
Rockfish, salted.	2,000	150						
Salmon, chinook, fresh.	12,500	550	25,825	\$946	1,200,000	\$41,222	21,975	1,383
Shad, fresh.	24,000	905			57,902	2,318		
Smelt, fresh.	21,437	800						
Striped bass, fresh.					1,218	244		
Sturgeon, fresh.					200,923	8,096		
Total.	228,618	12,281	25,825	946	1,200,013	51,061	22,000	1,711

Field of the fisheries of California in 1890—Continued.

Species.	San Diego.		San Luis Obispo.		San Mateo.		Santa Barbara.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Barracuda, fresh.....	133,200	\$5,328	22,705	\$720			60,115	\$9,000
Barracuda, salted.....	115,840	4,054						
Bonito, fresh.....	35,040	1,401					53,617	2,418
Bonito, salted.....	190,645	6,323	2,300	110			4,573	226
Flounders, fresh.....	6,078	243	15,040	632	473,085	\$7,195	6,208	311
Herring, fresh.....	30,000	600			364,814	5,120		
Mackerel, fresh.....	8,100	327	82,310	3,000			2,063	150
Perch, fresh.....	18,000	721						
Rockfish, fresh.....	30,000	1,300	75,108	3,010				
Rockfish, salted.....			5,000	250			4,516	223
Sardines, fresh.....	5,000	300						
Sea bass, fresh.....	10,005	440	50,315	1,750			8,585	418
Sea bass, salted.....			2,980	140				
Smelt, fresh.....	10,086	403	26,115	875	243,903	3,655		
Yellow-tail, fresh.....	34,000	980					30,343	1,532
Yellow-tail, salted.....	166,875	5,841					5,380	268
Other fish, fresh and salted.....	51,210	2,049			347,554	5,142	14,730	675
Abalone meats and shells.....	55,590	934					114,633	3,943
Octopus and squid.....	256,000	20,480						
Clams, hard.....	350,000	2,500						
Shrimp and prawn.....					1,613,346	73,303		
Spiny lobster.....	40,370	1,009					130,040	3,928
Hair-seal and sea-lion pelts.....		875		143				527
Sea-otter pelts.....								2,000
Whale oil.....			35,350	1,270				
Seal oil.....			2,190	73			4,800	256
Algae.....							22,645	914
Total.....	1,617,119	54,088	321,081	12,003	3,082,501	94,615	468,587	21,280

Species.	San Francisco.		Tehama.		Ventura.		Total.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Anchovies, fresh.....	125,000	\$2,700					125,000	\$2,700
Barracuda, fresh.....					11,415	\$480	295,238	10,645
Barracuda, salted.....							115,840	4,054
Bonito, fresh.....					5,736	218	98,582	4,297
Bonito, salted.....							187,417	4,656
Carp, fresh.....							54,113	1,974
Codfish, salted.....	1,782,679	44,567					1,782,679	44,567
Cultus-cod, fresh.....	147,478	5,578					167,786	6,303
Flounders, fresh.....	1,545,096	42,909			3,979	116	3,531,158	95,237
Flounders, salted.....							43,640	1,747
Herring, fresh.....	2,369,415	38,538					2,369,415	38,538
Kingfish, fresh.....	10,208	306					311,564	12,090
Mackerel, fresh.....							400,429	18,273
Perch, fresh.....	248,168	12,405			15,000	600	2,358,306	67,823
Rockfish, fresh.....	610,430	27,816					30,716	1,354
Rockfish, salted.....							3,380,118	134,482
Salmon, chinook, fresh.....	218,438	8,737	125,800	\$3,147			1,184,652	35,281
Salmon, silver, fresh.....							167,000	6,680
Salmon, silver, salted.....							363,380	7,607
Salmon, steelhead, fresh.....							1,314,880	20,591
Sardines, fresh.....	1,280,000	19,200					319,081	12,540
Sea bass, fresh.....	195,000	7,800			4,507	178	9,581	261
Sea bass, salted.....							318,140	11,691
Shad, fresh.....	118,942	3,508					2,073,509	61,308
Smelt, fresh.....	1,007,003	53,487					30,119	4,021
Striped bass, fresh.....	5,183	626					612,585	18,060
Sturgeon, fresh.....	68,110	1,953			9,980	305	112,563	4,817
Yellow-tail, fresh.....							172,268	6,100
Yellow-tail, salted.....					2,346	77	1,686,101	30,022
Other fish, fresh and salted.....	693,300	10,153					203,783	5,548
Abalone meats and shells.....	28,000	580					367,809	20,816
Octopus and squid.....	11,908	236					511,980	5,975
Clams, hard.....	38,530	1,920					1,261,980	13,431
Clams, soft.....	1,220,000	13,020					12,829,500	502,127
Oysters.....	12,829,500	592,137					2,700,000	11,250
Mussels.....	2,700,000	11,250					2,050,000	83,125
Crabs.....	2,006,000	80,000					5,822,083	304,568
Shrimp and prawn.....	1,950,000	90,000					378,310	7,767
Spiny lobster.....							47,563	7,580
Terrapin and frogs.....	35,000	4,300						1,770
Hair-seal and sea-lion pelts.....		60,816						80,816
Sea-otter pelts.....		27,300						20,300
Whale oil.....	2,197,000	108,783					2,325,915	105,082
Whalebone.....	170,118	680,472					170,118	680,472
Cod tongues.....	12,000	960					13,800	960
Seal oil.....							11,790	521
Algae.....							26,345	1,174
Total.....	38,429,049	1,333,308	125,800	\$3,147	52,013	2,064	36,530,194	2,562,520

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Table showing by counties and species the yield of the fisheries of California in 1891.

Species.	Contra Costa.		Del Norte.		Humboldt.		Los Angeles.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Barracuda, fresh.							219,001	\$9,430
Carp, fresh.	14,189	\$439						
Cultus-cod, fresh.					24,118	\$546		
Flounders, fresh.					151,018	2,517	187,819	8,812
Herring, fresh.	208,130	2,145			12,000	249	98,000	2,720
Mackerel, fresh.							226,469	13,058
Perch, fresh.					22,650	690	25,001	908
Rockfish, fresh.					34,472	1,034	31,192	3,248
Salmon, chinook, fresh.	594,006	22,790	308,750	80,282				
Salmon, silver, fresh.			182,500	4,818	690,946	29,098		
Salmon, silver, salted.					116,200	4,448		
Salmon, steelhead, fresh.			18,750	280	296,881	5,940		
Sardines, fresh.							68,007	1,226
Sea bass, fresh.							18,208	728
Sea bass, salted.							4,301	172
Shad, fresh.	108,611	4,320			180	16		
Smelt, fresh.	141,430	2,187			32,000	800	175,985	7,039
Striped bass, fresh.	25,822	2,596						
Sturgeon, fresh.	208,726	8,002						
Yellow-tail, fresh.								
Other fish, fresh and salted.	218,810	2,422					118,050	5,026
Abalone meats and shells.							8,135	88
Clams, hard.					47,250	1,012		
Clams, soft.					15,000	375		
Crabs.					98,100	2,408		
Shrimp and prawn.	812,806	26,907						
Spiny lobster.							102,125	2,689
Total.	2,382,029	85,889	519,000	14,360	1,741,885	52,116	1,427,542	52,829

Species.	Marin.		Monterey.		Orange.		Sacramento.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Barracuda, fresh.			13,235	\$785	2,000	\$80		
Carp, fresh.							43,430	\$1,590
Flounders, fresh.	401,986	\$7,017	190,510	2,810	6,710	267		
Flounders, salted.			41,071	1,044				
Herring, fresh.	220,841	4,060			8,488	255		
Mackerel, fresh.			22,794	1,037	2,000	120		
Perch, fresh.	55,006	2,200			2,200	120	4,553	274
Rockfish, fresh.			758,578	15,172	7,000	280		
Rockfish, salted.			12,472	780				
Salmon, chinook, fresh.	15,085	600	7,900	480			79,119	8,328
Sardines, fresh.	3,581	142						
Sea bass, fresh.	15,402	610			3,000	120		
Shad, fresh.							17,518	1,051
Smelt, fresh.	242,000	5,048	76,905	2,000	18,115	724		
Striped bass, fresh.							157	24
Sturgeon, fresh.	15,948	630					2,250	195
Yellow-tail, fresh.					5,000	200		
Other fish, fresh and salted.	264,840	2,924	16,920	610	2,000	80	228,445	5,588
Abalone meats and shells.			3,700	68				
Octopus and squid.			300,700	23,900				
Clams, hard.	28,790							
Clams, soft.	10,389	104						
Shrimp and prawn.	1,085,175	49,289						
Terrapin and frogs.	12,282	2,370						
Algae.			7,730	210				
Total.	2,470,415	79,581	1,409,725	52,314	54,088	2,238	975,493	14,029

Species.	Santa Cruz.		Shasta.		Solano.		Sonoma.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Barracuda, fresh.	4,260	\$212						
Flounders, fresh.	71,151	2,846					4,900	\$126
Mackerel, fresh.	12,655	592						
Rockfish, fresh.	189,094	7,265					4,264	171
Rockfish, salted.	5,120	207						
Salmon, chinook, fresh.	15,260	600	20,119	\$790	694,181	\$27,787	38,656	2,199
Shad, fresh.	20,120	1,205			58,790	2,350		
Smelt, fresh.	26,001	1,220						
Striped bass, fresh.								
Sturgeon, fresh.					369,260	19,991		
Total.	947,611	14,298	20,119	790	121,545	41,448	45,820	2,906

Yield of the fisheries of California in 1891—Continued.

Species.	San Diego.		San Luis Obispo.		San Mateo.		Santa Barbara.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Barracuda, fresh.....	229,755	\$0,188	49,800	\$1,750	.....	.....	58,000	\$2,900
Barracuda, salted.....	112,542	3,974	5,500	275	.....	.....	49,122	2,000
Bonito, fresh.....	59,900	2,288	.....	.....	.....	.....	3,701	180
Bonito, salted.....	169,783	5,949	1,000	50	.....	.....	7,010	348
Flounders, fresh.....	5,650	203	21,348	965	451,400	\$6,871	.....	.....
Herring, fresh.....	35,220	1,410	.....	.....	338,500	4,977	5,975	267
Mackerel, fresh.....	14,940	599	122,890	4,500	.....	.....	.....	.....
Rockfish, fresh.....	23,788	831	129,720	4,970	.....	.....	.....	.....
Rockfish, salted.....	62,000	2,486	1,500	75	.....	.....	3,117	146
Salmon, chinook, fresh.....	.....	.....	.....	.....	.....	.....	.....	.....
Sea bass, fresh.....	12,300	495	83,970	3,110	.....	.....	9,015	451
Sea bass, salted.....	.....	.....	17,000	850	.....	.....	.....	.....
Shad, fresh.....	15,735	630	19,800	687	234,700	3,730	7,790	388
Smelt, fresh.....	59,000	2,300	.....	.....	.....	.....	30,015	1,000
Yellow-tail, fresh.....	63,461	2,230	.....	.....	.....	.....	4,632	231
Yellow-tail, salted.....	84,630	3,380	.....	.....	329,120	4,745	17,084	842
Other fish, fresh and salted.....	52,120	1,172	.....	.....	.....	.....	241,828	8,348
Abalone meats and shells.....	290,000	2,000	.....	.....	1,356,345	61,610	.....	.....
Clams, hard.....	.....	.....	.....	.....	.....	.....	145,120	4,355
Shrimp and prawn.....	25,000	625	.....	.....	.....	.....	.....	2,087
Spiny lobster.....	.....	750	.....	350	.....	.....	.....	1,500
Hair-seal and sea-lion pelts.....	.....	.....	.....	.....	.....	.....	.....	.....
Sea-otter pelts.....	.....	.....	.....	.....	.....	.....	4,500	240
Whale oil.....	.....	.....	86,450	1,220	.....	.....	11,961	455
Seal oil.....	.....	.....	5,490	183	.....	.....	.....	.....
Algae.....	.....	.....	.....	.....	.....	.....	.....	.....
Total.....	1,314,938	41,102	498,596	19,044	2,710,118	81,023	579,538	22,606

Species.	San Francisco.		Tehama.		Ventura.		Total.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Anchovies, fresh.....	145,000	\$2,114	.....	.....	.....	.....	145,000	\$2,114
Atka mackerel, salted.....	64,800	4,800	.....	.....	.....	.....	64,800	4,800
Barracuda, fresh.....	.....	.....	.....	.....	8,610	\$972	8,610	\$972
Barracuda, salted.....	.....	.....	.....	.....	.....	.....	119,042	4,249
Bonito, fresh.....	.....	.....	.....	.....	6,318	240	106,410	4,626
Bonito, salted.....	.....	.....	.....	.....	.....	.....	174,484	6,179
Carp, fresh.....	.....	.....	.....	.....	.....	.....	50,618	2,016
Codfish, salted.....	2,047,911	51,303	.....	.....	.....	.....	2,047,911	51,303
Cultus-cod, fresh.....	186,500	9,799	.....	.....	.....	.....	212,618	7,630
Flounders, fresh.....	1,506,784	44,683	.....	.....	3,396	155	3,071,980	77,280
Flounders, salted.....	.....	.....	.....	.....	.....	.....	41,071	1,644
Herring, fresh.....	2,778,126	29,774	.....	.....	.....	.....	8,737,075	48,571
Kingfish, fresh.....	24,080	983	.....	.....	.....	.....	24,080	983
Mackerel, fresh.....	.....	.....	.....	.....	.....	.....	518,882	20,865
Perch, fresh.....	108,420	5,663	.....	.....	.....	.....	525,458	10,908
Rockfish, fresh.....	610,562	24,179	.....	.....	13,200	526	1,803,072	68,325
Rockfish, salted.....	.....	.....	.....	.....	.....	.....	20,219	1,268
Salmon, chinook, fresh.....	448,322	17,903	115,629	\$2,800	.....	.....	2,341,945	81,029
Salmon, silver, fresh.....	.....	.....	.....	.....	.....	.....	1,072,448	34,518
Salmon, silver, salted.....	.....	.....	.....	.....	.....	.....	116,200	4,448
Salmon, steelhead, fresh.....	.....	.....	.....	.....	.....	.....	215,731	6,230
Sardines, fresh.....	893,000	17,200	.....	.....	.....	.....	897,508	15,008
Sea bass, fresh.....	220,410	6,710	.....	.....	4,815	180	372,258	12,414
Sea bass, salted.....	.....	.....	.....	.....	.....	.....	21,201	1,022
Shad, fresh.....	230,490	8,914	.....	.....	.....	.....	445,008	15,806
Smelt, fresh.....	1,135,903	20,114	.....	.....	.....	.....	2,126,084	64,022
Striped bass, fresh.....	4,320	648	.....	.....	.....	.....	80,674	4,002
Sturgeon, fresh.....	72,250	2,305	.....	.....	.....	.....	727,561	22,213
Yellow-tail, fresh.....	.....	.....	.....	.....	9,276	323	160,961	6,501
Yellow-tail, salted.....	110,658	3,873	.....	.....	.....	.....	178,751	6,324
Other fish, fresh and salted.....	624,483	10,368	.....	.....	2,730	106	1,602,902	57,971
Abalone meats and shells.....	.....	.....	.....	.....	.....	.....	305,781	7,572
Octopus and squid.....	14,150	363	.....	.....	.....	.....	514,910	24,322
Clams, hard.....	94,850	2,033	.....	.....	.....	.....	450,800	5,600
Clams, soft.....	1,486,900	15,396	.....	.....	.....	.....	1,515,300	15,877
Oysters.....	13,367,600	618,455	.....	.....	.....	.....	13,367,600	618,455
Mussels.....	2,996,600	12,500	.....	.....	.....	.....	2,996,600	12,500
Crabs.....	2,250,000	90,000	.....	.....	.....	.....	2,248,100	89,400
Shrimp and prawn.....	1,667,614	75,735	.....	.....	.....	.....	4,892,940	225,001
Spiny lobster.....	.....	.....	.....	.....	.....	.....	272,245	7,096
Fur-seal and frog.....	57,500	4,500	.....	.....	.....	.....	40,702	7,770
Hair-seal and sea-lion pelts.....	.....	.....	.....	.....	.....	.....	.....	2,306
Fur-seal pelts.....	.....	124,220	.....	.....	.....	.....	.....	124,220
Sea-otter pelts.....	.....	30,200	.....	.....	.....	.....	1,768,985	31,706
Whale oil.....	1,727,535	60,970	.....	.....	.....	.....	223,771	71,196
Whalebone.....	223,771	1,116,855	.....	.....	.....	.....	.....	1,116,855
Cod oil.....	975	85	.....	.....	.....	.....	8,900	439
Seal oil.....	.....	.....	.....	.....	.....	.....	16,200	1,134
Cod tongues.....	16,200	1,134					19,141	705
Algae.....								
Total.....	38,238,514	2,448,540	115,629	2,800	48,905	1,914	32,483,906	2,081,436

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Table showing by counties and species the yield of the fisheries of California in 1892.

Species.	Contra Costa.		Del Norte.		Humboldt.		Los Angeles.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Barracuda, fresh.....							5,430	\$257
Carp, fresh.....	21,342	\$640						
Chinook-cod, fresh.....					30,000	\$1,050		
Flounders, fresh.....	303,350	4,500			100,873	4,307	156,548	6,202
Herring, fresh.....	327,515	3,413			13,000	300	41,000	1,640
Mackerel, fresh.....							313,837	12,552
Perch, fresh.....					23,500	500	24,841	904
Rockfish, fresh.....					50,000	1,500	97,755	2,310
Salmon, chinook, fresh.....	1,037,331	41,403	123,563	\$3,587				
Salmon, silver, fresh.....			90,124	1,534	782,638	28,006		
Salmon, silver, salted.....					30,000	1,500		
Salmon, steelhead, fresh.....			49,563	807	200,979	5,217		
Sardines, fresh.....							41,884	854
Sea bass, fresh.....							19,212	708
Shad, fresh.....					100	10		
Smelt, fresh.....	151,875	2,275			43,250	1,056	197,490	7,497
Striped bass, fresh.....	38,947	4,674						
Sturgeon, fresh.....	323,855	9,715						
Yellow-tail, fresh.....							66,347	2,054
Other fish, fresh and salted.....	255,470	4,372					111,479	4,578
Abalone meats and shells.....					7,775	103		
Clams, hard.....					52,500	1,125		
Clams, soft.....					17,400	435		
Crabs.....					112,320	3,900		
Shrimp and prawn.....	885,010	40,195						
Spiny lobster.....							128,425	3,340
Hair-seal and sea-lion pelts.....								330
Total.....	3,383,889	115,407	263,250	5,988	1,607,235	48,300	1,150,168	44,084

Species.	Marin.		Monterey.		Orange.		Sacramento.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Carp, fresh.....							44,320	\$1,551
Flounders, fresh.....	442,468	\$7,587	199,820	\$3,796	11,123	\$440		
Flounders, salted.....			43,837	1,784				
Herring, fresh.....	338,706	5,907			6,000	240		
Mackerel, fresh.....			6,209	288				
Perch, fresh.....	50,000	2,000			5,000	200	5,008	340
Rockfish, fresh.....			725,380	14,508	4,320	173		
Salmon, chinook, fresh.....	12,000	480	9,915	415	5,000	200	81,112	5,078
Sardines, fresh.....								
Sea bass, fresh.....	13,000	590						
Shad, fresh.....							31,579	1,265
Smelt, fresh.....	252,065	5,035	74,868	2,905	25,621	1,025		
Striped bass, fresh.....							190	36
Sturgeon, fresh.....	20,000	800					3,830	229
Yellow-tail, fresh.....					3,680	147		
Other fish, fresh and salted.....	303,519	4,050	14,068	507			242,497	5,802
Abalone meats and shells.....			4,100	85				
Octopus and squid.....			357,622	28,610				
Clams, hard.....	33,110	730						
Clams, soft.....	11,040	110						
Shrimp and prawn.....	1,180,020	53,500						
Terrapin and frogs.....	13,125	3,500						
Algae.....			14,835	503				
Total.....	2,680,113	84,950	1,437,733	53,547	60,743	2,425	460,195	14,925

Species.	Santa Cruz.		Shasta.		Solano.		Sonoma.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Flounders, fresh.....	71,315	\$2,503					5,197	\$210
Mackerel, fresh.....	5,783	300						
Rockfish, fresh.....	172,220	6,890					3,700	148
Rockfish, salted.....	2,620	121						
Salmon, chinook, fresh.....	14,175	640	31,445	\$785	944,507	\$38,220	28,620	1,730
Shad, fresh.....	25,000	1,400			57,702	2,631		
Smelt, fresh.....	82,323	2,000						
Striped bass, fresh.....					3,910	400		
Sturgeon, fresh.....	72,545	2,190			217,407	6,520		
Total.....	428,980	18,579	31,445	785	1,203,750	47,849	37,726	2,068

PACIFIC COAST FISHERIES.

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Field of the fisheries of California in 1895.—Continued.

Species.	San Diego.		San Luis Obispo.		San Mateo.		Santa Barbara.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Barracuda, fresh.....	100,700	\$7,506						
Barracuda, salted.....	100,614	3,337						
Bonito, fresh.....	50,000	2,000					20,000	\$1,000
Bonito, salted.....	171,223	6,070					1,000	50
Flounders, fresh.....	2,900	117	11,110	\$525	505,585	\$7,585	6,500	325
Herring, fresh.....	50,000	2,000			379,190	5,688		
Mackerel, fresh.....	4,770	191	11,500	456			5,500	275
Perch, fresh.....	25,000	800						
Rockfish, fresh.....	50,000	2,000	98,240	3,865				
Rockfish, salted.....			6,500	325			150	27
Sardines, fresh.....		130						
Sea bass, fresh.....	10,000	400	61,050	1,800			14,000	700
Sea bass, salted.....			500	25				
Smelt, fresh.....	18,000	720	5,300	186	232,795	3,792	8,000	400
Yellow-tail, fresh.....	50,000	2,000					25,000	1,750
Yellow-tail, salted.....	189,607	6,721					1,800	90
Other fish, fresh and salted.....	158,925	6,300			379,185	5,688	19,450	973
Abalone meats and shells.....	124,120	3,224					238,463	5,280
Clams, hard.....	252,000	1,800						
Shrimp and prawn.....					1,475,020	60,089		4,648
Spiny lobster.....	20,000	500					254,850	4,648
Hair-seal and sea-lion pelts.....		600		256				1,021
Sea-otter pelts.....								1,200
Whale oil.....			32,100	1,070				
Algae.....							13,400	540
Total.....	1,483,978	47,526	226,700	8,516	2,901,775	80,740	518,063	18,277

Species.	San Francisco.		Tehama.		Ventura.		Total.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Anchovies, fresh.....	150,175	\$1,502					150,175	\$1,502
Barracuda, fresh.....					11,000	\$440	217,190	8,608
Barracuda, salted.....							109,614	3,337
Bonito, fresh.....					7,110	280	77,110	3,280
Bonito, salted.....							172,222	6,120
Carp, fresh.....							66,062	2,191
Cod, salted.....	2,274,505	50,804					2,274,505	50,804
Cultus-cod, fresh.....	200,670	6,020					230,670	7,070
Flounders, fresh.....	2,312,210	53,789			3,000	120	4,182,018	92,426
Flounders, salted.....							43,837	1,754
Herring, fresh.....	3,431,416	38,589					4,488,887	55,708
Kingfish, fresh.....	40,000	1,201					40,000	1,201
Mackerel, fresh.....							358,889	14,158
Perch, fresh.....	201,108	6,083					335,117	10,927
Rockfish, fresh.....	644,572	19,350			14,000	560	1,619,607	51,283
Rockfish, salted.....							9,670	483
Salmon, chinook, fresh.....	1,125,928	44,917	129,368	83,210			2,541,204	141,155
Salmon, chinook, salted.....	90,600	3,600					90,600	3,600
Salmon, silver, fresh.....							881,762	27,632
Salmon, silver, salted.....							30,000	1,600
Salmon, steelhead, fresh.....							310,442	6,084
Sardines, fresh.....	703,130	14,063					732,994	15,297
Sea bass, fresh.....	135,350	5,414					253,212	9,610
Sea bass, salted.....					4,000	160	4,500	185
Shad, fresh.....	242,740	4,855					528,494	14,372
Smelt, fresh.....	849,568	26,398					1,919,894	53,408
Striped bass, fresh.....	13,153	1,315					66,299	2,488
Sturgeon, fresh.....	80,160	2,405					716,017	21,854
Yellow-tail, fresh.....					8,000	320	168,027	6,871
Yellow-tail, salted.....							191,407	6,511
Other fish, fresh and salted.....	728,827	13,253			2,000	80	2,317,410	46,150
Abalone meats and shells.....	17,000	429					404,547	9,261
Octopus and squid.....							374,022	20,000
Clams, hard.....	141,800	2,804					479,500	6,440
Clams, soft.....	1,088,700	18,888					2,017,200	30,433
Oysters.....	15,098,700	608,257					15,098,700	608,257
Mussels.....	2,880,000	12,000					2,880,000	12,000
Crabs.....	2,750,000	90,000					2,862,230	102,900
Shrimp and prawn.....	1,773,295	81,043					5,311,245	241,817
Spiny lobster.....							308,278	8,498
Terrapin and frogs.....	32,500	4,550					45,028	2,564
Hair-seal and sea-lion pelts.....								2,267
Fur-seal pelts.....		167,526						167,526
Sea-otter pelts.....		34,950						34,150
Whale oil.....	1,542,743	61,053					1,874,848	62,123
Whalebone.....	197,289	937,371					197,289	937,371
Cod sounds.....	600	43					800	43
Cod tongues.....	27,500	1,925					27,500	1,925
Algae.....							28,325	1,138
Total.....	30,791,703	2,418,976	128,389	3,210	42,110	1,900	57,838,486	3,022,901

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Statement by counties, apparatus, and species of the yield of the vessel fisheries of California in 1889, 1890, 1891, and 1892.

Apparatus and species.	Los Angeles.		San Diego.		San Francisco.		Total.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
1889.								
Lines:								
Barracuda, salted.....			60,683	\$2,134			60,683	\$2,134
Bonito, salted.....			95,184	3,331			95,184	3,331
Cod, salted.....					1,483,434	\$36,567	1,483,434	36,567
Yellow-tail, salted.....			66,664	3,040			66,664	3,040
Total.....			342,781	8,485	1,483,434	36,567	1,700,155	45,692
Parasella nets:								
Flounders, fresh.....					352,320	8,806	352,320	8,806
Kingfish, fresh.....					8,460	254	8,460	254
Rockfish, fresh.....					33,312	999	33,312	999
Other fish, fresh.....					14,790	443	14,790	443
Prawn, fresh.....					13,218	1,080	13,218	1,080
Octopus.....					1,100	22	1,100	22
Total.....					423,170	12,506	423,170	12,506
Miscellaneous:								
Abalone meat and shells.....			27,540	1,067			27,540	1,067
Hair-seal pelts.....				1,000				1,000
Fur-seal pelts.....						15,219		15,219
Sea-otter pelts.....						27,700		27,700
Whale oil.....					1,480,680	60,952	1,480,680	60,952
Whalebone.....					119,650	530,478	119,650	530,478
Cod tongues.....					12,600	882	12,600	882
Total.....			27,540	2,067	1,612,330	625,231	1,639,870	627,318
Grand total.....			270,371	10,582	3,496,254	674,224	3,766,195	684,906
1890.								
Lines:								
Barracuda, salted.....			72,460	2,534			72,460	2,534
Bonito, salted.....			112,860	3,950			112,860	3,950
Cod, salted.....					1,782,679	44,567	1,782,679	44,567
Yellow-tail, salted.....			104,340	3,652			104,340	3,652
Total.....			289,660	10,136	1,782,679	44,567	2,072,279	54,703
Parasella nets:								
Flounders, fresh.....					347,112	8,678	347,112	8,678
Kingfish, fresh.....					10,208	306	10,208	306
Rockfish, fresh.....					35,320	1,080	35,320	1,080
Other fish, fresh.....					13,530	406	13,530	406
Prawn, fresh.....					9,845	1,770	9,845	1,770
Octopus.....					1,809	36	1,809	36
Total.....					417,824	12,256	417,824	12,256
Miscellaneous:								
Abalone meat and shells.....			55,580	934			55,580	934
Hair-seal pelts.....				875				875
Fur-seal pelts.....						68,816		68,816
Sea-otter pelts.....						27,300		27,300
Whale oil.....					2,197,665	103,782	2,197,665	103,782
Whalebone.....					170,118	680,472	170,118	680,472
Cod tongues.....					13,800	906	13,800	906
Total.....			55,580	1,809	2,361,583	882,336	2,417,173	884,145
Grand total.....			345,190	11,945	4,582,086	930,150	4,927,276	951,104
1891.								
Lines:								
Atka mackerel, salted.....					64,800	4,880	64,800	4,880
Barracuda, fresh.....	2,100	\$84					2,100	84
Barracuda, salted.....			70,964	2,484			70,964	2,484
Bonito, salted.....			102,284	3,578			102,284	3,578
Cod, salted.....					2,647,911	51,369	2,647,911	51,369
Mackerel, fresh.....	12,150	688					12,150	688
Yellow-tail, fresh.....	2,500	100					2,500	100
Yellow-tail, salted.....					110,454	3,873	110,454	3,873
Total.....	16,750	670	173,168	6,062	2,223,260	60,136	2,413,317	66,556

Statement by counties, apparatus, and species of the yield of the vessel fisheries of California in 1889, 1890, 1891, and 1892—Continued.

Apparatus and species.	Los Angeles.		San Diego.		San Francisco.		Total.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
1891.								
Paranets nets:								
Flounders, fresh					621,845	\$18,858	621,845	\$18,858
Kingfish, fresh					24,060	983	24,060	983
Rockfish, fresh					62,590	2,490	62,590	2,490
Other fish, salted					46,690	1,461	46,690	1,461
Prawn, fresh					6,150	1,150	6,150	1,150
Octopus					6,150	133	6,150	133
Total					767,497	24,783	767,497	24,783
Miscellaneous:								
Abalone meat and shells			52,120	\$1,172			52,120	1,172
Hair-seal pelts				750				750
Fur-seal pelts					134,220		134,220	
Sea-otter pelts					30,200		30,200	
Whale oil					1,727,535	69,970	1,727,535	69,970
Whalebone					223,771	1,118,858	223,771	1,118,858
Cod oil					975	65	975	65
Cod tongues					16,200	1,134	16,200	1,134
Total			52,120	1,922	1,968,481	1,354,444	2,020,601	1,356,366
Grand total	10,750	\$670	225,318	7,984	4,950,257	1,439,353	5,201,325	1,448,007
1892.								
Seines:								
Salmon, salted					90,000	3,000	90,000	3,000
Lines:								
Barracuda, fresh	6,430	257					6,430	257
Barracuda, salted			68,510	2,397			68,510	2,397
Bonito, salted			96,558	3,380			96,558	3,380
Cod, salted					2,274,565	58,884	2,274,565	58,884
Mackerel, fresh	36,435	1,456					36,435	1,456
Yellow-tail, fresh	7,040	282					7,040	282
Yellow-tail, salted			108,975	3,814			108,975	3,814
Total	49,905	1,995	274,043	9,591	2,274,565	58,884	2,598,513	69,450
Paranets nets:								
Flounders, fresh					1,400,192	35,239	1,400,192	35,239
Kingfish, fresh					40,000	1,201	40,000	1,201
Rockfish, fresh					116,952	3,508	116,952	3,508
Other fish, fresh					74,240	2,228	74,240	2,228
Prawn, fresh					3,270	654	3,270	654
Octopus					8,000	150	8,000	150
Total					1,651,654	42,979	1,651,654	42,979
Miscellaneous:								
Abalone meat and shells			124,210	3,234			124,210	3,234
Hair-seal pelts				690				690
Fur-seal pelts					187,526		187,526	
Sea-otter pelts					34,950		34,950	
Whale oil					1,542,743	61,053	1,542,743	61,053
Whalebone					197,339	937,371	197,339	937,371
Cod sounds					600	42	600	42
Cod tongues					27,500	1,925	27,500	1,925
Total			124,210	3,804	1,768,182	1,302,867	1,892,392	1,306,761
Grand total	49,905	1,995	398,253	13,485	5,794,401	1,806,310	6,222,539	1,321,790

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Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1889.

Counties and apparatus of capture.	Anchovies, fresh.		Barracuda, fresh.		Barracuda, salted.		Bonito, fresh.		Bonito, salted.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
San Francisco	30,140	\$800								
Gill nets and trammel nets:										
Monterey			38,056	\$1,080						
San Diego			36,793	1,473			10,080	\$427		
San Francisco	62,370	1,847								
Santa Barbara							20,075	1,063	2,615	\$125
Total	62,370	1,847	64,849	2,553			31,355	1,460	2,615	125
Lines:										
Los Angeles			88,891	3,454						
Orange			2,000	80						
San Diego			121,000	4,840	36,423	\$1,275	34,350	1,375	56,133	1,945
San Luis Obispo			23,116	875	1,000	50	1,500	75		
Santa Barbara			65,370	3,250	19,530	978	2,834	141		
Santa Cruz			5,000	240						
Ventura			10,882	400			10,580	405		
Total			318,239	13,239	56,943	2,303	49,264	1,966	56,133	1,905
Grand total	122,510	2,447	383,088	16,381	56,943	2,303	80,619	3,456	58,750	2,090
Counties and apparatus of capture.	Carp, fresh.		Cultus-cod, fresh.		Flounders, fresh.		Flounders, salted.		Herring, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
Humboldt					125,450	\$2,509			10,000	\$200
Los Angeles					3,000	123			41,000	1,640
Marin					65,395	2,600			36,915	1,077
Orange					1,415	50			2,280	90
Sacramento	10,064	\$353								
San Diego					5,050	202			18,150	725
San Francisco					234,108	8,984			398,541	11,696
Santa Barbara					3,540	172				
Sonoma					5,560	220				
Total	10,064	353			433,546	14,840			484,886	15,328
Gill nets and trammel nets:										
Los Angeles									4,000	160
Marin									53,635	2,153
Monterey					103,208	3,200				
San Diego									6,830	273
San Francisco			16,670	\$687	449,499	18,053			1,150,034	34,789
Santa Cruz					22,650	906				
Total			16,670	687	635,357	23,219			1,234,389	37,375
Bag nets and parangas:										
Contra Costa					256,692	3,850			192,519	2,838
Los Angeles					61,502	2,490			16,000	640
Marin					343,258	5,249			254,092	3,650
Monterey					61,710	1,235	47,500	\$1,900		
Orange					2,874	100			2,965	80
San Diego					2,000	80				
San Francisco			15,100	604	513,400	7,700			396,000	5,940
San Luis Obispo					10,300	508				
San Mateo					768,883	11,403				
Santa Cruz					33,100	1,324				
Ventura					2,130	87				
Total			15,100	604	2,084,900	33,983	47,500	1,900	883,636	13,398
Fyke nets and minor nets:										
Contra Costa	11,914	387								
Sacramento	30,336	1,034								
Total	41,150	1,381								

Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1889—Continued.

Counties and apparatus of capture.	Carp, fresh.		Cultus-cod, fresh.		Flounders, fresh.		Flounders, salted.		Herring, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Lines:										
Humboldt			21,040	\$735	6,900	\$830				
Los Angeles					113,230	4,529				
Monterey					53,572	1,070	20,380	\$815		
Orange					1,192	45				
San Francisco			78,234	2,790	2,715	275				
San Luis Obispo					6,000	210				
Santa Barbara					4,235	213				
Santa Cruz					13,924	507				
Total			99,274	3,465	201,858	7,479	20,380	815		
Grand total	51,214	\$1,734	131,044	4,736	3,303,070	78,523	67,860	2,715	2,572,611	\$96,101

Counties and apparatus of capture.	Mackerel, fresh.		Perch, fresh.		Rockfish, fresh.		Rockfish, salted.		Sardines, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
Humboldt			20,150	\$504					15,756	\$563
Los Angeles			10,200	408						
Marin			53,410	2,133					2,000	80
Orange			1,000	40						
Sacramento			16,972	59					7,000	280
San Diego			16,193	648					1,070,000	21,400
San Francisco			197,125	9,650			1,200	\$80		
Santa Barbara							3,215	211		
Santa Cruz										
Total			299,050	13,648			4,415	271	1,004,756	22,323
Gill nets and trammel nets:										
Los Angeles	25,105	\$1,004								
Marin			36,587	1,467						
Monterey	5,560	275			538,325	\$10,707				
San Diego	3,000	120								
San Francisco					95,405	4,770				
Santa Barbara	2,563	125								
Santa Cruz	2,762	130			28,000	1,180				
Total	38,950	1,654	36,587	1,467	661,730	16,657				
Bag nets and parangas nets:										
Los Angeles			7,000	280	13,968	550			2,641	106
Orange			1,320	52						
San Diego			6,522	265						
San Francisco					100,405	40,016				
Santa Cruz					35,250	1,410				
Ventura					5,380	218				
Total			14,842	597	155,023	6,201			2,641	106
Fyke nets and minor nets:										
Sacramento			3,320	198						
Lines:										
Humboldt					26,115	755				
Los Angeles	92,318	3,693			31,968	1,279				
Monterey	69,540	3,478			574,428	11,500	30,750	1,230		
Orange	3,000	120			6,000	240				
San Diego	7,000	281			35,000	1,400				
San Francisco					361,620	18,281	4,000	200		
San Luis Obispo	66,070	3,560			79,000	3,065	3,388	165		
Santa Barbara	2,262	115								
Santa Cruz	7,083	358			63,278	2,415				
Sonoma					3,275	135				
Ventura					4,631	192				
Total	270,393	11,506			1,215,613	39,362	38,128	1,595		
Grand total	315,253	13,249	353,849	15,908	2,082,366	62,120	42,563	1,866	1,007,397	22,429

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Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1889—Continued.

Counties and apparatus of capture.	Salmon, fresh.						Salmon, salted.			
	Chinook.		Silver.		Steelhead.		Silver.			
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.		
Seines:										
Del Norte.....	105,458	\$2,676	189,305	\$3,543	48,750	\$728	225,400	\$5,916		
Humboldt.....	28,760	720	580,441	17,414	193,480	5,804				
Shasta.....	118,145	2,955								
Tehama.....										
Total.....	252,363	6,351	769,646	20,957	242,230	6,532	225,400	8,916		
Gill nets and trammel nets:										
Contra Costa.....	3,195,747	127,830								
Del Norte.....	119,417	3,402								
Humboldt.....			596,074	19,869	198,691	3,974	210,300	8,408		
Marin.....	25,000	1,000								
Sacramento.....	151,540	10,007								
San Francisco.....	1,005,505	40,140								
Solano.....	1,975,400	78,936								
Sonoma.....	26,610	1,610								
Total.....	6,499,417	262,825	596,074	19,869	198,691	3,974	210,300	8,408		
Lines:										
Monterey.....	10,098	606								
Santa Cruz.....	13,552	610								
Total.....	23,650	1,216								
Grand total....	6,765,490	271,092	1,365,720	40,826	440,921	10,506	435,600	17,824		
Counties and apparatus of capture.	Sea bass, fresh.		Sea bass, salted.		Shad, fresh.		Smelt, fresh.		Striped bass, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
Humboldt.....					300	\$30	29,500	\$728		
Los Angeles.....							90,976	3,639		
Marin.....							48,520	1,860		
Orange.....							8,385	375		
San Diego.....							8,000	360		
San Francisco.....							138,978	5,590		
Santa Barbara.....							3,280	168		
Total.....					300	30	328,739	12,739		
Gill nets and trammel nets:										
Contra Costa.....					96,722	3,869			13,776	\$3,443
Los Angeles.....	2,777	\$111					35,325	1,413		
Marin.....	23,142	1,320					43,560	1,740		
Monterey.....							83,258	3,330		
Sacramento.....					18,224	768				
San Diego.....	2,000	120					3,110	125		
San Francisco.....	325,000	13,000			61,072	2,443	550,914	22,394	1,500	800
San Luis Obispo.....	82,180	1,520	2,500	\$125			28,060	880		
Santa Barbara.....	5,418	275					2,810	142		
Santa Cruz.....					20,284	610	18,000	745		
Solano.....					72,206	2,888			900	240
Total.....	421,517	16,646	2,500	125	263,488	10,803	774,977	30,871	16,296	4,073
Bag nets and parangas:										
Contra Costa.....							190,012	2,070		
Los Angeles.....							19,000	790		
Marin.....							179,130	2,740		
Orange.....							8,420	335		
San Francisco.....							256,000	4,492		
San Mateo.....							218,910	3,485		
Total.....							812,162	13,882		
Lines:										
Los Angeles.....	8,322	235								
Orange.....	3,000	120								
San Diego.....	8,748	350								
Santa Barbara.....	6,400	320								
Ventura.....	4,780	168								
Total.....	31,250	1,511								
Grand total....	432,847	17,967	2,500	125	263,788	10,823	1,915,478	57,482	16,296	4,073

Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1889—Continued.

Counties and apparatus of capture.	Sturgeon, fresh.		Yellow-tail, fresh.		Yellow-tail, salted.		Other fish, fresh and salted.		Total.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
Del Norte.....									243, 413	\$5, 947
Humboldt.....									1, 184, 721	34, 115
Los Angeles.....							16, 362	\$654	177, 884	7, 027
Marin.....									182, 240	7, 670
Orange.....									16, 080	635
Sacramento.....							81, 087	1, 257	62, 123	1, 600
San Diego.....							17, 900	716	73, 293	2, 961
San Francisco.....							7, 975	406	2, 054, 905	55, 431
Santa Barbara.....			13, 380	\$680	2, 750	\$138	15, 432	750	39, 582	1, 948
Santa Cruz.....									3, 215	311
Shasta.....									28, 760	730
Sonoma.....									5, 500	230
Tehama.....									118, 145	2, 855
Total.....			13, 380	680	2, 750	138	107, 656	3, 783	4, 299, 431	137, 449
Gill nets and trammel nets:										
Contra Costa.....	262, 919	\$7, 888					1, 020	65	3, 370, 784	143, 005
Del Norte.....									113, 417	3, 403
Humboldt.....									1, 004, 965	32, 251
Los Angeles.....									67, 297	2, 688
Marin.....	30, 340	1, 200							222, 264	8, 680
Monterey.....							12, 000	470	630, 407	19, 782
Sacramento.....	4, 628	293							109, 650	11, 993
San Diego.....							17, 409	693	80, 832	3, 230
San Francisco.....	18, 630	505					29, 921	935	3, 813, 368	139, 895
San Luis Obispo.....									82, 740	2, 925
Santa Barbara.....									34, 101	1, 700
Santa Cruz.....									92, 276	3, 711
Solano.....	174, 598	5, 238							2, 221, 163	87, 392
Sonoma.....									36, 610	1, 610
Total.....	491, 471	15, 184					61, 010	2, 163	12, 330, 013	462, 264
Bag nets and parangas:										
Contra Costa.....							192, 033	2, 795	771, 845	11, 603
Los Angeles.....							33, 212	1, 328	183, 343	6, 133
Marin.....							248, 687	3, 573	1, 028, 707	15, 402
Monterey.....							7, 230	230	116, 430	3, 355
Orange.....									14, 979	567
San Diego.....									8, 583	345
San Francisco.....							441, 970	6, 679	1, 723, 025	29, 431
San Luis Obispo.....									10, 300	506
San Mateo.....							515, 085	4, 564	1, 283, 456	19, 452
Santa Cruz.....									68, 350	2, 734
Ventura.....							6, 733	203	14, 345	585
Total.....							1, 246, 109	19, 430	5, 191, 983	90, 093
Fyke nets and minor nets:										
Contra Costa.....							12, 023	361	23, 906	719
Sacramento.....							149, 636	3, 564	182, 185	4, 784
Total.....							161, 661	3, 925	206, 121	5, 502
Lines:										
Contra Costa.....	87, 491	2, 625							87, 491	2, 625
Humboldt.....									54, 145	1, 120
Los Angeles.....			30, 050	1, 226			13, 200	458	377, 587	15, 002
Monterey.....									758, 766	18, 689
Orange.....			5, 000	200			2, 000	80	22, 192	885
San Diego.....			36, 000	1, 440	53, 061	1, 858	26, 000	1, 120	415, 767	15, 904
San Francisco.....	56, 490	1, 085					80, 300	1, 057	669, 359	24, 638
San Luis Obispo.....									211, 066	8, 025
Santa Barbara.....			13, 116	605	2, 419	120	3, 965	186	122, 562	6, 165
Santa Cruz.....									102, 837	4, 130
Solano.....	58, 198	1, 748							58, 198	1, 748
Sonoma.....									3, 375	135
Ventura.....			4, 862	145					86, 366	1, 440
Total.....	202, 179	6, 008	88, 126	3, 086	55, 489	1, 978	139, 485	3, 543	2, 890, 382	101, 454
Grand total.....	693, 650	21, 250	101, 408	4, 296	86, 243	2, 116	1, 703, 091	32, 634	34, 986, 919	786, 792

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Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1890.

Counties and apparatus of capture.	Anchovies, fresh.		Barracuda, fresh.		Barracuda, salted.		Bonito, fresh.		Bonito, salted.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seine:										
San Francisco	33,750	\$675								
Gill nets and trammel nets:										
Monterey			18,658	\$1,120			7,800	\$318		
San Diego			31,020	1,341						
San Francisco	101,250	2,025					26,045	1,340	2,425	\$115
Santa Barbara										
Total	101,250	2,025	49,678	2,461			34,805	1,658	2,425	115
Lines:										
Los Angeles			142,414	5,097						
Orange			2,000	120						
San Diego			102,180	4,085	43,440	\$1,520	27,080	1,083	67,785	2,373
San Luis Obispo			22,705	720					2,300	110
Santa Barbara			60,115	3,000			25,072	1,278	2,147	110
Santa Cruz			3,781	182						
Ventura			11,415	480			5,726	218		
Total			345,590	14,284	43,440	1,520	58,478	2,579	72,132	2,593
Grand total	195,000	2,700	963,238	16,645	43,440	1,520	93,283	4,237	74,567	2,708
Counties and apparatus of capture.	Carp, fresh.		Cultus-cod, fresh.		Flounders, fresh.		Flounders, salted.		Herring, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seine:										
Humboldt					156,599	\$3,132			11,150	\$223
Los Angeles					2,637	105			28,000	1,120
Marin					62,180	2,480			28,279	1,131
Orange					2,687	100			4,325	172
Sacramento	11,500	\$406								
San Diego					4,263	170			14,600	560
San Francisco					208,370	8,335			485,890	7,268
Santa Barbara					2,813	141				
Sonoma					6,190	248				
Total	11,500	406			445,739	14,711			571,614	10,494
Gill nets and trammel nets:										
Los Angeles									2,500	100
Marin									56,572	2,362
Monterey					188,323	3,806			3,920	196
San Diego									4,000	240
San Francisco			27,538	\$1,105	418,572	16,850			1,497,580	21,863
Santa Cruz					26,950	1,078				
Total			27,538	1,105	633,845	31,734			1,559,572	24,601
Bag nets and parangas:										
Contra Costa					285,550	4,263			214,129	3,212
Los Angeles					129,929	5,197			17,500	700
Marin					378,800	5,782			264,100	4,261
Monterey					65,450	1,310	30,534	\$1,222		
Orange					4,588	180			4,120	100
San Diego					1,815	73				
San Francisco			22,400	895	567,702	8,716			425,975	6,388
San Luis Obispo					7,040	352				
San Mateo					478,085	7,195			354,814	5,120
Santa Cruz					35,250	1,410				
Ventura					2,973	116				
Total			22,400	895	1,952,189	34,614	30,534	1,222	1,900,638	19,841
Fyke nets and minor nets:										
Contra Costa	12,200	360								
Sacramento	34,314	1,262								
Total	46,514	1,622								

Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1890—Continued.

Counties and apparatus of capture.	Carp, fresh.		Cultus-cod, fresh.		Flounders, fresh.		Flounders, salted.		Herring, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Lines:										
Humboldt			20,290	\$710	7,513	\$675				
Los Angeles					55,017	2,301				
Monterey					57,632	1,152	18,115	\$625		
Orange					1,725	70				
San Francisco			97,480	3,873	3,340	330				
San Luis Obispo					8,000	280				
Santa Barbara					3,485	170				
Santa Cruz					16,570	622				
Total			117,760	4,283	152,282	5,500	18,115	535		
Grand total	58,113	\$1,974	167,758	6,283	3,184,046	76,550	48,640	1,747	3,368,824	\$54,990

Counties and apparatus of capture.	Mackerel, fresh.		Perch, fresh.		Rockfish, fresh.		Rockfish, salted.		Sardines, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
Humboldt			21,610	\$539						
Los Angeles			7,200	288					19,785	\$791
Marin			47,915	1,920						
Orange			2,172	80					5,035	300
Sacramento			1,373	83						
San Diego			12,320	493					5,000	300
San Francisco			248,108	12,405					1,360,000	19,200
Santa Barbara							1,067	\$54		
Santa Cruz							3,000	150		
Total			340,686	15,808			4,067	204	1,360,800	20,391
Gill nets and trammel nets:										
Los Angeles	35,792	\$1,431								
Marin			34,082	1,360						
Monterey					587,340	\$11,747				
San Diego	2,680	107								
San Francisco					92,651	4,633				
Santa Barbara	1,483	70								
Santa Cruz	2,945	148			40,575	1,923				
Total	42,890	1,756	34,082	1,800	720,566	18,003				
Bag nets and parasella nets:										
Los Angeles			12,790	512	17,424	697			5,000	200
Orange			2,917	110						
San Diego			5,710	228						
San Francisco					99,055	3,953				
Santa Cruz					48,825	1,873				
Ventura					7,750	316				
Total			21,417	850	171,064	6,833			5,000	200
Fyke nets and minor nets:										
Sacramento			4,233	255						
Lines:										
Humboldt					24,068	748				
Los Angeles	124,382	4,976			40,306	1,612				
Monterey	41,312	2,066			656,338	13,155	18,200	728		
Orange	6,000	240			15,600	600				
San Diego	5,510	230			30,000	1,200				
San Francisco					383,404	17,870				
San Luis Obispo	82,310	3,030			75,104	3,010	5,000	250		
Santa Barbara	1,620	80					3,429	172		
Santa Cruz	7,550	330			87,405	3,460				
Sonoma					4,515	180				
Ventura					7,316	290				
Total	268,684	10,942			1,326,356	41,926	36,629	1,150		
Grand total	311,564	12,696	400,420	18,273	2,217,968	68,762	90,719	1,354	1,314,600	20,591

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Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1890—Continued.

Counties and apparatus of capture.	Salmon, fresh.						Salmon, salted.	
	Chinook.		Silver.		Steelhead.		Silver.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Seines:								
Del Norte.....	149,666	\$4,490	250,378	\$4,227	51,675	\$777		
Humboldt.....			460,273	15,943	153,423	3,068	91,942	\$3,654
Shasta.....	25,825	646						
Tehama.....	125,980	2,147						
Total.....	301,351	8,283	710,647	19,570	205,298	3,845	91,942	3,654
Gill nets and trammel nets:								
Contra Costa.....	1,423,880	54,955						
Del Norte.....	195,584	5,867						
Humboldt.....	22,110	826	474,305	15,811	158,101	3,162	75,656	3,026
Marin.....	145,540	10,188						
Sacramento.....	218,436	8,737						
San Francisco.....	1,030,560	41,233						
Solano.....	21,375	1,283						
Total.....	3,057,495	125,133	474,305	15,811	158,101	3,162	75,656	3,026
Lines:								
Monterey.....	8,770	526						
Santa Cruz.....	12,500	550						
Total.....	21,270	1,076						
Grand total....	3,380,116	124,492	1,184,952	35,381	363,399	7,007	167,606	6,680

Counties and apparatus of capture.	Sea bass, fresh.		Sea bass, salted.		Shad, fresh.		Smelt, fresh.		Striped bass, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
Humboldt.....					250	\$25	23,180	\$704		
Los Angeles.....							80,150	3,605		
Marin.....							42,080	1,620		
Orange.....							10,890	435		
San Diego.....							7,800	312		
San Francisco.....							141,730	5,069		
Santa Barbara.....							2,287	115		
Total.....					250	25	333,047	12,520		
Gill nets and trammel nets:										
Contra Costa.....					162,216	4,069			15,715	\$3,143
Los Angeles.....			3,781	\$151			42,640	1,701		
Marin.....	30,365	\$1,200					41,230	1,649		
Monterey.....					15,000	663	107,104	4,287	54	8
Sacramento.....							2,298	91		
San Diego.....	2,915	119			110,942	3,508	566,922	23,676	3,132	626
San Francisco.....	185,000	7,800					35,115	875		
San Luis Obispo.....	60,315	1,750	2,800	140			2,500	125		
Santa Barbara.....	3,675	192			24,880	993	21,437	860		
Santa Cruz.....					57,893	2,316			1,218	244
Total.....	282,470	11,061	6,581	21	317,860	11,666	808,314	32,255	20,119	4,021
Bag nets and parangas:										
Contra Costa.....							148,760	3,231		
Los Angeles.....							48,550	1,950		
Marin.....							195,460	2,000		
Orange.....							8,235	325		
San Francisco.....							293,851	5,143		
San Mateo.....							243,862	3,855		
Total.....							941,228	16,551		
Lines:										
Los Angeles.....	14,344	574								
Orange.....	5,000	209								
San Diego.....	8,050	321								
Santa Barbara.....	4,710	228								
Ventura.....	4,507	178								
Total.....	36,611	1,490								
Grand total....	319,081	12,550	6,581	21	318,140	11,691	3,073,596	61,396	20,119	4,021

Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1890—Continued.

Counties and apparatus of capture.	Sturgeon, fresh.		Yellow-tail, fresh.		Yellow-tail, salted.		Other fish, fresh and salted.		Total.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Sekines:										
Del Norte.....									451,916	\$0,494
Humboldt.....									922,806	26,688
Los Angeles.....							19,155	\$707	180,877	6,476
Marin.....									180,434	7,311
Orange.....									25,109	987
Sacramento.....							83,542	1,310	68,505	1,799
San Diego.....							15,505	624	58,978	2,359
San Francisco.....							6,860	363	3,404,078	53,935
Santa Barbara.....			15,778	\$790	2,809	\$140	11,000	500	35,835	1,740
Santa Cruz.....									3,000	150
Shasta.....									23,825	646
Sonoma.....									9,180	348
Tehama.....									123,860	3,147
Total.....			15,778	790	2,809	140	106,212	3,564	4,474,008	115,060
Gill nets and trammel nets:										
Contra Costa.....	155,005	\$5,871					280	11	1,737,786	70,000
Del Norte.....									195,584	5,807
Humboldt.....									708,004	21,900
Los Angeles.....									84,713	3,383
Marin.....	33,170	1,520							222,529	8,902
Monterey.....							16,121	623	921,546	21,779
Sacramento.....	3,800	232							105,414	11,390
San Diego.....							15,615	625	68,476	2,741
San Francisco.....	16,277	488					48,973	1,140	3,362,983	91,481
San Luis Obispo.....									78,390	2,706
Santa Barbara.....									37,298	1,543
Santa Cruz.....									116,787	4,704
Solano.....	392,443	6,974							1,292,133	49,637
Sonoma.....									21,375	1,233
Total.....	450,445	14,185					80,568	2,300	8,912,707	297,008
Bag nets and parangella nets:										
Contra Costa.....							208,196	3,065	856,635	12,791
Los Angeles.....							69,922	2,773	301,475	12,059
Marin.....							278,100	4,078	1,136,400	17,051
Monterey.....							8,975	258	104,359	2,790
Orange.....									31,448	843
San Diego.....									7,525	301
San Francisco.....							470,638	6,684	1,979,731	31,920
San Luis Obispo.....							947,554	5,143	1,419,255	21,313
San Mateo.....									82,075	3,233
Santa Cruz.....									17,709	698
Ventura.....			4,700	185			2,940	77		
Total.....			4,700	185			1,884,531	22,227	5,633,782	100,306
Fyke nets and minor nets:										
Contra Costa.....							12,683	380	34,893	745
Sacramento.....							159,067	3,813	197,633	5,270
Total.....							171,770	4,193	222,526	6,016
Lines:										
Contra Costa.....	59,827	1,195							39,837	1,195
Humboldt.....									52,761	2,133
Los Angeles.....			38,300	1,330			19,300	768	433,923	17,350
Monterey.....									797,367	18,122
Orange.....			10,000	400			2,000	80	42,725	1,710
San Diego.....			24,000	960	62,535	2,160	20,000	800	390,580	14,751
San Francisco.....	48,833	1,465					99,000	1,410	626,637	24,445
San Luis Obispo.....									196,821	7,490
Santa Barbara.....			14,665	742	2,500	128	3,670	175	122,098	4,981
Santa Cruz.....									128,754	5,144
Solano.....	67,480	2,024							67,480	2,024
Sonoma.....									4,515	180
Ventura.....			5,280	210					34,244	1,376
Total.....	156,140	4,664	92,105	3,843	66,125	2,317	138,470	3,233	2,084,161	101,963
Grand total.....	612,586	18,869	112,593	4,817	67,928	2,457	1,961,571	35,616	22,377,189	824,485

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Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1891.

Counties and apparatus of capture.	Anchovies, fresh.		Barracuda, fresh.		Barracuda, salted.		Bonito, fresh.		Bonito, salted.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seine:										
San Francisco	36,250	\$483								
Gill nets and trammel nets:										
Monterey			13,235	\$785						
San Diego			83,630	2,153			13,950	\$548		
San Francisco	106,750	1,631					20,032	1,000	1,065	\$80
Santa Barbara										
Total	106,750	1,631	67,055	2,938			33,982	1,548	1,065	80
Lines:										
Los Angeles			207,901	6,346						
Orange			2,000	80						
San Diego			175,935	7,035	42,578	\$1,400	45,950	1,838	67,549	2,371
San Luis Obispo			49,800	1,750	5,500	275			1,000	50
Santa Barbara			54,000	2,900			30,160	1,000	2,016	100
Santa Cruz			4,350	212						
Ventura			8,610	373			6,318	240		
Total			508,596	18,686	48,078	1,785	72,438	3,078	70,565	2,531
Grand total	145,000	2,114	573,651	21,633	48,078	1,785	106,410	4,626	72,250	2,601

Counties and apparatus of capture.	Carp, fresh.		Cultus-cod, fresh.		Flounders, fresh.		Flounders, salted.		Herring, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seine:										
Humboldt					142,373	\$2,947			12,000	\$240
Los Angeles					4,238	173			45,000	1,800
Marin					40,275	1,600			18,567	953
Orange					1,815	70			3,083	120
Sacramento	11,267	\$394								
San Diego					3,822	142			25,040	1,028
San Francisco					143,430	5,757			591,718	5,930
Santa Barbara					3,110	153				
Sonoma					4,900	196				
Total	11,267	394			343,741	10,918			698,965	9,769
Gill nets and trammel nets:										
Los Angeles									3,500	140
Marin									23,124	1,325
Monterey					138,172	3,763			8,580	384
San Diego					288,840	11,674			1,775,150	17,760
San Francisco			32,870	\$1,315	21,800	878				
Santa Cruz										
Total			32,870	1,315	448,912	15,313			1,821,874	19,609
Bag nets and parangas:										
Contra Costa					279,840	4,063			303,130	3,145
Los Angeles					73,231	2,929			19,500	780
Marin					361,120	5,417			270,840	4,083
Monterey					30,185	805	28,579	\$1,144		
Orange					3,530	132			2,438	125
San Diego					1,537	61				
San Francisco			30,740	1,290	541,679	8,226			406,260	6,094
San Luis Obispo					11,216	595				
San Mateo					451,400	8,671			358,550	4,977
Santa Cruz					34,625	1,385				
Ventura					2,666	155				
Total			30,740	1,290	1,783,260	30,439	38,579	1,144	1,341,718	19,199
Fyke and minor nets:										
Contra Costa	14,188	436								
Sacramento	34,163	1,196								
Total	48,351	1,632								

Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1891—Continued.

Counties and apparatus of capture.	Carp, fresh.		Cultus-cod, fresh.		Flounders, fresh.		Flounders, salted.		Herring, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Lines:										
Humboldt.....			34, 118	\$840	8, 645	\$770				
Los Angeles.....					80, 253	3, 210				
Monterey.....					22, 153	443	12, 493	\$500		
Orange.....					1, 885	55				
San Francisco.....			125, 880	4, 254	4, 900	400				
San Luis Obispo.....					10, 130	360				
Santa Barbara.....					3, 900	195				
Santa Cruz.....					14, 638	565				
Total.....			150, 008	5, 094	145, 072	6, 017	12, 493	500		
Grand total....	50, 618	\$2, 016	313, 618	7, 639	2, 720, 964	62, 687	41, 071	1, 044	3, 757, 075	\$48, 871
Counties and apparatus of capture.										
	Mackerel, fresh.		Perch, fresh.		Rockfish, fresh.		Rockfish, salted.		Sardines, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
Humboldt.....			23, 025	\$690						
Los Angeles.....			7, 915	317					62, 007	\$1, 106
Marin.....			30, 118	1, 200						
Orange.....			1, 500	60					3, 561	143
Sacramento.....			1, 076	65						
San Diego.....			17, 518	701					8, 000	320
San Francisco.....			100, 430	5, 933					800, 000	17, 200
Santa Barbara.....							779	\$49		
Santa Cruz.....							5, 130	257		
Total.....			271, 172	8, 716			5, 909	306	933, 568	18, 828
Gill nets and trammel nets:										
Los Angeles.....	78, 117	\$3, 124								
Marin.....			34, 500	1, 000						
Monterey.....	2, 800	140			362, 718	\$7, 235				
San Diego.....	3, 970	150								
San Francisco.....					82, 873	3, 555				
Santa Barbara.....	3, 225	102								
Santa Cruz.....	3, 500	175			41, 750	1, 670				
Total.....	91, 702	3, 760	34, 890	1, 000	463, 339	12, 480				
Bag nets and parangella nets:										
Los Angeles.....			17, 776	671	32, 547	903			4, 000	100
Orange.....			1, 805	60						
San Diego.....			6, 250	250						
San Francisco.....					97, 873	3, 915				
Santa Cruz.....					49, 830	1, 990				
Ventura.....					6, 835	270				
Total.....			25, 861	981	177, 085	7, 077			4, 000	100
Fyke and minor nets:										
Sacramento.....			3, 477	209						
Lines:										
Humboldt.....					34, 472	1, 034				
Los Angeles.....	348, 323	9, 934			53, 845	2, 546				
Monterey.....	20, 854	1, 497			305, 962	7, 917	19, 472	780		
Orange.....	3, 060	120			7, 000	280				
San Diego.....	10, 980	440			63, 060	2, 480				
San Francisco.....					370, 486	14, 510				
San Luis Obispo.....	122, 390	4, 540			129, 720	4, 970				
Santa Barbara.....	2, 750	135					1, 500	75		
Santa Cruz.....	9, 365	417			91, 504	3, 605	2, 538	117		
Sonoma.....					4, 264	171				
Ventura.....					6, 425	256				
Total.....	437, 181	17, 103			1, 100, 388	37, 278	23, 210	963		
Grand total....	618, 863	20, 863	325, 430	10, 906	1, 830, 812	66, 635	23, 210	1, 258	937, 568	18, 928

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Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1891—Continued.

Counties and apparatus of capture.	Salmon, fresh.						Salmon, salted.	
	Chinook.		Silver.		Steelhead.		Silver.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Seines:								
Del Norte.....	114,800	\$3,446	182,500	\$4,818	18,750	\$380		
Humboldt.....			442,166	14,739	147,388	2,948	66,384	\$2,465
Shasta.....	38,110	739						
Tehama.....	115,623	2,890						
Total.....	256,623	7,066	624,666	19,557	166,138	3,228	66,384	2,465
Gill nets and trammel nets:								
Contra Costa.....	504,008	23,760						
Del Norte.....	193,860	5,816						
Humboldt.....			448,780	14,959	140,593	2,992	40,816	1,963
Marin.....	15,035	690						
Sacramento.....	76,112	5,328						
San Francisco.....	448,322	17,933						
Solano.....	694,181	37,767						
Sonoma.....	36,656	2,199						
Total.....	2,656,172	83,403	448,780	14,959	140,593	2,992	40,816	1,963
Lines:								
Monterey.....	7,960	480						
Santa Cruz.....	15,260	690						
Total.....	23,220	1,170						
Grand total....	2,341,045	91,639	1,073,446	34,516	315,731	6,220	110,200	4,448

Counties and apparatus of capture.	Sea bass, fresh.		Sea bass, salted.		Shad, fresh.		Smelt, fresh.		Striped bass, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
Humboldt.....					100	\$16	32,000	\$900		
Los Angeles.....							68,974	2,760		
Marin.....							28,310	1,120		
Orange.....							9,470	378		
San Diego.....							12,000	480		
San Francisco.....							170,971	6,839		
Santa Barbara.....							3,790	188		
Total.....					100	16	325,515	12,665		
Gill nets and trammel nets:										
Contra Costa.....					108,011	4,320			23,932	\$3,590
Los Angeles.....			4,301	\$172			45,491	1,819		
Marin.....	15,489	\$610					27,220	1,080		
Monterey.....							78,985	3,080		
Sacramento.....					17,516	1,061			157	24
San Diego.....	3,386	135					3,735	155		
San Francisco.....	230,410	6,719			230,490	6,914	683,884	27,355	4,920	648
San Luis Obispo.....	88,970	3,110	17,000	850			19,990	687		
Santa Barbara.....	4,880	245					4,000	200		
Santa Cruz.....					30,120	1,206	26,061	1,226		
Solano.....					58,739	2,350			2,265	340
Total.....	333,102	10,810	21,301	1,022	444,846	15,840	886,906	35,507	30,674	4,902
Bag nets and perambula nets:										
Contra Costa.....							141,430	2,167		
Los Angeles.....							61,500	2,460		
Marin.....							189,580	2,848		
Orange.....							8,845	345		
San Francisco.....							280,888	4,920		
San Mateo.....							234,760	3,720		
Total.....							913,603	16,461		
Lines:										
Los Angeles.....	18,206	728								
Orange.....	8,000	120								
San Diego.....	9,000	360								
Santa Barbara.....	4,135	206								
Ventura.....	4,815	190								
Total.....	39,156	1,604								
Grand total....	373,258	12,414	21,301	1,022	445,006	15,856	2,126,084	64,623	30,674	4,902

Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1891—Continued.

Counties and apparatus of capture.	Sturgeon, fresh.		Yellow-tail, fresh.		Yellow-tail, salted.		Other fish, fresh and salted.		Total.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
Del Norte									316, 140	\$3, 544
Humboldt									805, 000	24, 745
Los Angeles							20, 323	\$1, 081	205, 545	7, 297
Marin									115, 270	4, 563
Orange									19, 408	770
Sacramento							57, 587	1, 415	69, 930	1, 574
San Diego							21, 587	862	88, 267	3, 531
San Francisco							9, 280	464	2, 001, 057	42, 328
Santa Barbara			10, 805	\$540	2, 500	\$125	12, 220	600	33, 204	1, 055
Santa Cruz									5, 130	257
Shasta									29, 110	730
Sonoma									4, 960	198
Tehama									115, 023	2, 990
Total			10, 805	540	2, 500	125	120, 997	4, 422	3, 872, 080	90, 398
Gill nets and trammel nets:										
Contra Costa	213, 025	\$6, 409					915	37	940, 489	32, 116
Del Norte									193, 890	5, 616
Humboldt									648, 189	19, 934
Los Angeles									131, 400	5, 256
Marin	15, 946	630							131, 707	5, 245
Monterey							11, 810	455	605, 718	14, 478
Sacramento	3, 250	195							97, 035	6, 500
San Diego							21, 228	845	100, 653	4, 374
San Francisco	18, 137	545					43, 970	1, 062	3, 943, 986	97, 192
San Luis Obispo									125, 900	4, 647
Santa Barbara									33, 822	1, 687
Santa Cruz									123, 021	5, 152
Solano	274, 785	8, 243							1, 029, 970	38, 700
Sonoma									86, 656	2, 199
Total	525, 743	10, 022					77, 023	2, 399	8, 151, 415	249, 308
Bag nets and parangas nets:										
Contra Costa							197, 882	2, 935	813, 272	12, 310
Los Angeles							76, 325	3, 053	274, 879	10, 955
Marin							264, 840	3, 924	1, 083, 960	10, 251
Monterey							5, 110	155	63, 874	1, 904
Orange									17, 476	673
San Diego									7, 787	311
San Francisco							440, 031	6, 201	1, 797, 421	30, 528
San Luis Obispo									11, 216	595
San Mateo							329, 120	4, 745	1, 285, 770	30, 313
Santa Cruz									84, 455	3, 575
Ventura			4, 256	150			2, 730	108	17, 717	683
Total			4, 256	150			1,316, 038	21, 121	5, 525, 227	97, 956
Fyke and minor nets:										
Contra Costa							15, 013	450	29, 301	876
Sacramento							170, 858	4, 151	208, 408	5, 556
Total							185, 871	4, 601	237, 699	6, 432
Lines:										
Contra Costa	56, 100	1, 083							56, 100	1, 083
Humboldt									67, 235	2, 644
Los Angeles			65, 100	2, 008			22, 302	892	700, 849	29, 064
Monterey									487, 903	11, 596
Orange			5, 000	200			2, 000	80	25, 965	983
San Diego			50, 000	2, 380	53, 461	2, 250	41, 815	1, 073	679, 278	22, 277
San Francisco	54, 113	1, 790					84, 492	1, 140	625, 991	21, 773
San Luis Obispo									320, 540	12, 040
Santa Barbara			9, 210	400	2, 152	108			109, 805	5, 461
Santa Cruz									135, 005	5, 509
Solano	91, 585	2, 748							91, 585	2, 748
Sonoma									4, 264	171
Ventura			5, 020	173					31, 188	1, 231
Total	201, 808	6, 191	124, 420	5, 601	55, 593	2, 336	155, 473	4, 027	3, 244, 818	114, 192
Grand total	727, 551	22, 213	158, 481	6, 491	68, 093	2, 461	1,856, 303	36, 570	21, 031, 839	607, 221

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Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1892.

Counties and apparatus of capture.	Anchovies, fresh.		Barracuda, fresh.		Barracuda, salted.		Bonito, fresh.		Bonito, salted.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
San Francisco	29,653	\$390								
Gill nets and trammel nets:										
San Diego			47,190	\$1,886			13,525	\$540		
San Francisco	111,123	1,113								
Santa Barbara							9,200	400	440	\$22
Total	111,123	1,113	47,190	1,886			22,725	1,000	440	22
Lines:										
Los Angeles			254,433	5,345						
San Diego			182,370	6,110	41,104	\$1,440	35,475	1,400	74,064	2,000
San Luis Obispo			7,500	263						
Santa Barbara			73,000	3,050			10,800	540	500	25
Ventura			11,000	440			7,110	280		
Total			497,503	15,758	41,104	1,440	54,385	2,280	75,224	2,715
Grand total	150,175	1,503	544,693	17,644	41,104	1,440	77,110	3,280	75,064	2,740
Counties and apparatus of capture.	Carp, fresh.		Cultus-cod, fresh.		Flounders, fresh.		Flounders, salted.		Herring, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
Humboldt					145,873	\$2,917			13,000	\$200
Los Angeles					2,529	101			25,000	1,000
Marin					38,000	1,520			9,945	395
Orange					2,300	95			3,745	150
Sacramento	9,915	\$347								
San Diego					2,070	82			36,840	1,475
San Francisco					98,105	2,943			719,200	7,192
Santa Barbara					2,510	125				
Sonoma					5,187	210				
Total	9,915	347			206,654	7,903			807,840	10,478
Gill nets and trammel nets:										
Los Angeles									2,000	80
Marin									25,470	1,019
Monterey					123,300	2,468				
San Diego									13,000	522
San Francisco			34,000	\$1,020	192,085	5,955			2,757,180	22,572
Santa Cruz					17,845	714				
Total			34,000	1,020	333,900	9,138			2,297,710	24,190
Bag nets and parangas:										
Contra Costa					303,350	4,550			327,515	3,413
Los Angeles					90,804	3,903			14,000	500
Marin					404,468	6,067			303,350	4,550
Monterey					34,900	700	30,107	\$1,207		
Orange					5,782	230			2,255	90
San Diego					890	35				
San Francisco			36,170	1,085	605,703	9,110			455,027	6,825
San Luis Obispo					9,000	450				
San Mateo					568,585	7,585			379,190	5,068
Santa Cruz					23,529	1,541				
Ventura					3,000	130				
Total			36,170	1,085	2,007,063	34,181	30,107	1,207	1,881,337	21,125
Fyke nets and minor nets:										
Contra Costa	21,343	\$640								
Sacramento	34,405	1,204								
Total	55,747	1,844								

Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1892—Continued.

Counties and apparatus of capture.	Carp, fresh.		Cultus-cod, fresh.		Flounders, fresh.		Flounders, salted.		Herring, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Lines:										
Humboldt			30,000	\$1,050	15,000	\$1,350				
Los Angeles					54,215	2,108				
Monterey					31,470	638	13,670	\$547		
Orange					2,960	115				
San Francisco			130,500	3,915	5,515	551				
San Luis Obispo					2,110	75				
Santa Barbara					3,090	300				
Santa Cruz					19,950	798				
Total			180,500	4,965	135,210	5,085	13,670	547		
Grand total	65,003	\$2,191	230,670	7,070	2,772,856	57,197	43,837	1,754	4,486,887	\$65,796
Counties and apparatus of capture.										
	Mackerel, fresh.		Perch, fresh.		Rockfish, fresh.		Rockfish, salted.		Sardines, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
Humboldt			28,500	\$560						
Los Angeles			7,114	285					34,884	\$654
Marin			28,535	1,141						
Orange			4,000	160					5,000	200
Sacramento			1,114	67						
San Diego			14,725	589						
San Francisco			201,108	6,033					708,130	14,063
Santa Barbara							273	\$14		
Santa Cruz							2,620	131		
Total			285,066	8,825			2,895	145	747,004	15,037
Gill nets and trammel nets:										
Los Angeles	67,350	\$2,093								
Marin			21,475	859						
Monterey	125	6			358,880	\$7,137				
San Diego	1,020	41								
San Francisco					94,703	2,541				
Santa Barbara	3,080	154								
Santa Cruz	2,483	125			43,085	1,723				
Total	74,358	3,019	21,475	859	484,618	11,401				
Bag nets and parangas nets:										
Los Angeles			17,727	709	11,908	477			5,000	200
Orange			1,000	40						
San Diego			5,375	211						
San Francisco					91,103	2,733				
Santa Cruz					45,270	1,811				
Ventura					7,780	311				
Total			24,002	960	154,061	5,332			5,000	200
Fyke nets and minor nets:										
Sacramento			4,554	273						
Lines:										
Humboldt					50,000	1,500				
Los Angeles					45,617	1,833				
Monterey					365,520	7,360	18,580	743		
Orange					4,220	173				
San Diego					50,000	2,000				
San Francisco					351,614	10,548				
San Luis Obispo	11,300	456			96,240	3,865	6,500	235		
Santa Barbara	2,420	121					275	13		
Santa Cruz	6,390	274			63,805	3,356				
Sonoma					2,700	148				
Ventura					6,230	349				
Total	339,908	9,684			1,062,326	31,041	25,255	1,081		
Grand total	319,964	12,703	335,117	10,787	1,708,635	47,774	28,250	1,236	752,004	15,237

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Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1899—Continued.

Counties and apparatus of capture.	Salmon, fresh.								Salmon, salted.	
	Chinook.		Silver.		Steelhead.				Silver.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Seines:										
Del Norte.....	49,583	\$1,067	99,124	\$1,534	49,583	\$867				
Humboldt.....			368,050	12,935	129,350	2,567			21,630	\$685
Shasta.....	31,445	785								
Tehama.....	128,869	3,210								
Total.....	209,897	5,062	467,174	14,469	178,913	3,454			21,630	885
Gill nets and trammel nets:										
Contra Costa.....	1,037,331	41,496								
Del Norte.....	84,000	2,530								
Humboldt.....			394,588	13,163	131,529	2,630			17,870	685
Marin.....	12,000	480								
Sacramento.....	61,112	5,678								
San Francisco.....	1,122,928	44,917								
Solano.....	944,597	38,228								
Sonoma.....	28,639	1,780								
Total.....	3,310,717	135,038	394,588	13,163	131,529	2,630			17,870	685
Lines:										
Monterey.....	9,915	415								
Santa Cruz.....	14,175	640								
Total.....	21,090	1,055								
Grand total.....	3,541,204	141,155	881,762	27,632	310,442	6,084			29,000	1,569
Counties and apparatus of capture.	Sea bass, fresh.		Sea bass, salted.		Shad, fresh.		Smelt, fresh.		Striped bass, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
Humboldt.....					100	\$10	42,250	\$1,056		
Los Angeles.....							75,323	2,013		
Marin.....							24,500	980		
Orange.....							11,921	477		
San Diego.....							13,645	546		
San Francisco.....							112,470	4,500		
Santa Barbara.....							4,200	213		
Total.....					100	10	284,369	10,785		
Gill nets and trammel nets:										
Contra Costa.....					136,364	4,181			38,947	\$4,674
Los Angeles.....	2,833	\$102					51,107	2,044		
Marin.....	13,000	520					25,500	1,020		
Monterey.....							74,868	2,965		
Sacramento.....					21,579	1,295			199	80
San Diego.....	2,375	95					4,355	174		
San Francisco.....	135,330	5,414			242,740	4,855	433,747	17,848	13,153	1,315
San Luis Obispo.....	61,650	1,808	500	\$25			5,300	186		
Santa Barbara.....	7,640	373					3,740	187		
Santa Cruz.....					35,000	1,400	52,323	2,090		
Solano.....					87,702	2,631			3,910	469
Total.....	222,568	8,311	500	25	526,394	14,762	650,639	26,044	56,209	6,488
Bag nets and paraneils:										
Contra Costa.....							151,675	2,275		
Los Angeles.....							61,000	2,440		
Marin.....							202,063	2,635		
Orange.....							12,700	548		
San Francisco.....							300,351	4,550		
San Mateo.....							352,795	3,792		
Total.....							980,584	16,640		
Lines:										
Los Angeles.....	16,650	666								
San Diego.....	7,025	305								
Santa Barbara.....	6,360	328								
Ventura.....			4,000	180						
Total.....	30,044	1,299	4,000	180						
Grand total.....	253,212	9,610	4,500	185	526,494	14,772	1,919,894	32,469	56,209	6,488

Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1892—Continued.

Counties and apparatus of capture.	Sturgeon, fresh.		Yellow-tail, fresh.		Yellow-tail, salted.		Other fish, fresh and salted.		Total.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
Del Norte.....									198,250	\$3,408
Humboldt.....									708,753	21,190
Los Angeles.....							14,174	\$684	161,004	5,737
Marin.....									100,971	4,039
Orange.....									27,046	1,082
Sacramento.....							63,168	1,447	74,197	1,861
San Diego.....							18,150	725	88,530	3,540
San Francisco.....							15,550	547	1,887,025	38,068
Santa Barbara.....			18,620	\$931	800	\$10	16,000	800	42,465	2,123
Santa Cruz.....									2,620	131
Shasta.....									31,445	788
Sonoma.....									8,187	210
Tehama.....									128,389	5,210
Total.....			18,620	931	800	40	126,042	4,203	3,516,482	\$3,044
Gill nets and tram-net nets:										
Contra Costa.....	274,575	\$4,237					1,080	43	1,491,297	58,028
Del Norte.....									84,000	2,520
Humboldt.....									543,487	16,488
Los Angeles.....									123,010	4,919
Marin.....	20,000	800							117,445	4,098
Monterey.....							9,638	383	564,851	12,968
Sacramento.....	3,820	220							106,710	7,222
San Diego.....							14,850	595	4,086,122	108,627
San Francisco.....	18,840	565					39,665	1,012	87,450	2,919
San Luis Obispo.....									24,100	1,195
Santa Barbara.....									150,705	6,052
Santa Cruz.....									1,253,756	47,649
Solano.....	217,697	6,529							28,839	1,730
Sonoma.....										
Total.....	534,872	16,360					65,233	2,032	9,838,157	278,798
Bag nets and parantzella nets:										
Contra Costa.....							228,185	3,443	916,725	13,660
Los Angeles.....							73,845	2,954	283,314	11,323
Marin.....							303,519	4,650	1,213,402	18,302
Monterey.....							4,420	125	69,577	2,632
Orange.....									23,737	906
San Diego.....									38,165	546
San Francisco.....							508,657	8,129	2,001,011	32,436
San Luis Obispo.....									9,000	450
San Mateo.....							579,183	5,696	1,516,755	22,751
Santa Cruz.....									78,790	3,152
Ventura.....			3,170	127			2,000	80	15,950	638
Total.....			3,170	127			1,496,811	25,061	6,127,426	106,918
Fyke nets and minor nets:										
Contra Costa.....							26,205	786	47,547	1,426
Sacramento.....							180,329	4,855	219,288	5,632
Total.....							206,534	5,641	266,835	7,258
Lines:										
Contra Costa.....	49,280	1,478							49,280	1,478
Humboldt.....									95,000	3,900
Los Angeles.....			59,307	2,973			23,480	858	663,943	21,725
Monterey.....									445,269	9,982
Orange.....									10,900	435
San Diego.....			50,000	2,090	80,632	2,907	125,925	5,040	622,745	24,102
San Francisco.....	61,328	1,840					92,715	1,343	641,064	18,197
San Luis Obispo.....									125,650	4,984
Santa Barbara.....			16,380	619	1,000	50	3,450	173	117,235	5,872
Santa Cruz.....									124,320	5,068
Solano.....	72,545	2,176							72,545	2,176
Sonoma.....									3,760	148
Ventura.....			4,820	193					33,160	1,323
Total.....	183,145	5,494	134,197	5,531	81,632	2,957	245,550	7,404	3,005,441	90,899
Grand total.....	718,617	31,854	155,987	6,569	32,432	2,997	2,143,170	43,831	22,364,341	574,407

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Table showing by counties the yield of crustaceans, mollusks, and reptiles, etc., in the shore or boat fisheries of California in 1889, 1890, 1891, and 1892.

Years and counties.	Crabs.		Shrimp and prawn.		Spiny lobsters.		Abalone meat and shells.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
1889.								
Bag nets:								
Contra Costa			919,321	\$41,709				
Marin			1,225,028	55,093				
San Francisco			1,945,221	84,559				
San Mateo			1,532,034	69,616				
Total			5,532,104	251,637				
Other apparatus:								
Humboldt	94,400	\$3,000			108,000	\$2,815	18,810	\$452
Los Angeles							3,850	73
Monterey					48,158	1,208		
San Diego	1,944,000	78,045					30,000	600
San Francisco					110,300	3,200	228,879	5,877
Santa Barbara								
Total	2,038,400	78,045			266,458	7,227	282,539	7,002
1890.								
Bag nets:								
Contra Costa			967,947	43,983				
Marin			1,290,690	58,649				
San Francisco			1,941,055	86,894				
San Mateo			1,613,240	73,393				
Total			5,812,848	264,823				
Other apparatus:								
Humboldt	90,000	3,125						
Los Angeles					107,000	2,810	800	54
Monterey							4,400	83
San Diego					40,370	1,009		
San Francisco	2,000,000	80,000					38,000	560
Santa Barbara					130,940	3,928	114,933	3,943
Total	2,090,000	83,125			278,310	7,747	148,183	4,619
1891.								
Bag nets:								
Contra Costa			813,806	36,967				
Marin			1,085,175	49,289				
San Francisco			1,631,232	74,585				
San Mateo			1,356,345	61,610				
Total			4,886,558	222,451				
Other apparatus:								
Humboldt	98,100	3,408						
Los Angeles					102,125	2,688	5,185	86
Monterey							3,700	66
San Diego					25,000	625	34,000	499
San Francisco	2,250,000	90,000					241,826	8,248
Santa Barbara					145,120	4,355		
Total	2,348,100	93,408			272,245	7,668	274,661	8,880
1892.								
Bag nets:								
Contra Costa			888,010	40,195				
Marin			1,180,020	53,590				
San Francisco			1,770,025	80,289				
San Mateo			1,475,020	66,989				
Total			5,313,075	241,163				
Other apparatus:								
Humboldt	112,320	3,900						
Los Angeles					128,435	3,340	7,775	182
Monterey							4,180	85
San Diego					20,000	500		
San Francisco	2,750,000	90,000					30,000	500
Santa Barbara					154,850	4,048	228,463	5,380
Total	2,862,320	102,900			303,275	8,488	280,427	8,117

Table showing by counties the yield of crustaceans, mollusks, and reptiles, etc., in the shore or boat fisheries of California—Continued.

Years and counties.	Clams, hard.		Clams, soft.		Mussels.		Oysters.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
1889.								
Humboldt	43,750	\$637	16,800	\$270				
Marin	22,000	680	11,100	169				
San Diego	420,000	2,600			2,100,000	\$2,750	12,300,000	\$371,525
San Francisco	74,000	1,605	1,000,000	11,818				
Total	579,750	4,922	1,118,700	11,997	2,100,000	8,750	12,300,000	371,525
1890.								
Humboldt	42,000	900	12,000	300				
Marin	30,450	855	10,000	161				
San Diego	350,000	2,500			2,700,000	11,350	12,350,500	\$32,137
San Francisco	80,550	1,920	1,230,000	13,050				
Total	511,000	5,975	1,261,000	13,431	2,700,000	11,350	12,350,500	32,137
1891.								
Humboldt	47,250	1,012	15,000	\$75				
Marin	28,700	815	10,300	166				
San Diego	280,000	2,000			2,000,000	12,500	13,387,000	\$18,455
San Francisco	94,850	2,033	1,450,000	15,396				
Total	450,800	5,960	1,515,300	15,577	2,998,000	12,500	13,387,000	18,455
1892.								
Humboldt	52,500	1,125	17,400	435				
Marin	33,110	720	11,040	110				
San Diego	252,000	1,800			2,800,000	12,000	15,000,700	\$33,237
San Francisco	141,800	2,804	1,968,700	19,883				
Total	479,500	6,449	2,017,300	20,433	2,800,000	12,000	15,000,700	33,237

Years and counties.	Octopus and squid.		Terrapin and frogs.		Hair-seal, sealion, and sea-otter pelts.		Whale and seal oil.		Algae.	
	Lbs.	Value.	Lbs.	Value.	No.	Value.	Lbs.	Value.	Lbs.	Value.
1889.										
Los Angeles					215	\$500	7,300	\$288		
Marin			11,250	\$3,000					5,000	\$222
Monterey	408,000	\$37,440								
San Francisco	15,000	750	30,000	2,400						
San Luis Obispo					78	195	33,210	1,107		
Santa Barbara					181	3,423	4,300	324	14,370	\$75
Total	493,000	\$38,190	41,250	5,400	474	4,198	44,610	1,619	20,170	\$307
1890.										
Los Angeles					83	225	4,800	192		
Marin			12,500	3,350					6,500	\$290
Monterey	236,000	\$20,480								
San Francisco	10,000	500	35,000	4,300						
San Luis Obispo					83	143	40,440	1,343		
Santa Barbara					190	2,527	4,800	254	22,845	\$114
Total	296,000	\$20,780	47,500	7,650	235	2,895	50,040	1,791	29,345	\$1,174
1891.										
Marin			12,300	3,370					7,700	\$310
Monterey	300,700	\$21,960								
San Francisco	8,000	240	37,500	4,500						
San Luis Obispo					123	350	41,040	1,405		
Santa Barbara					182	3,597	4,500	240	11,301	\$455
Total	308,700	\$24,200	49,800	7,770	215	3,955	46,440	1,645	19,141	\$765
1892.										
Los Angeles					121	\$30				
Marin			13,125	3,500						
Monterey	357,623	\$26,619								
San Francisco	9,000	270	32,500	4,500						
San Luis Obispo					25	325	34,015	1,200		
Santa Barbara					85	3,221	2,150	112	13,490	\$540
Total	366,623	\$28,889	45,625	8,050	201	2,807	38,165	1,312	26,225	\$1,133

SAN DIEGO COUNTY.

As compared with the last investigation, the fisheries of the most southern county in California show considerable fluctuation. The decrease in the general building trade had called to other sections of the State a large number of men and their families, thus reducing the home demand for food-fish, and consequently curtailing the extent of the fisheries. Some attempts have recently been made to increase the domestic and foreign trade in fish, but these efforts were scarcely sufficient to retain the few fishermen employed. During 1892 a limited quantity of fresh fish was shipped as far east as Denver, Colo., and one carload, made up of crawfish (i. e., spiny lobsters), fresh fish, and salted fish, was sent to Chicago and Philadelphia in a refrigerator car. It was probably the first attempt to dispose of the abundant crawfish of the west-coast in the markets east of the Rocky Mountains. At the time of this experiment the true lobsters were very scarce and of high price in the East, and the crawfish was regarded as a fair substitute and met with a ready sale at good prices.

The yield of the fisheries of this county is nearly equally divided between fish consumed in a fresh condition and those cured. The aggregate amount of fish proper taken in 1892 was somewhat less than in 1889, as may be seen from the following comparison:

Fish.	1889.	1892.
	<i>Pounds.</i>	<i>Pounds.</i>
Fresh.....	630,400	522,000
Cured.....	530,220	566,365
Total.....	1,160,620	1,088,365

Both the dry and pickle cured fish are largely exported to the Sandwich Islands. Five-eighths of the catch is taken by means of small vessels ranging in size from 7 to 15 tons. These vessels in most cases frequent grounds south of San Diego. Sometimes, if fish are not found nearer, they resort to grounds 100 miles from the home port. The crew usually consists of three men, who employ hand and troll lines. About three-eighths of the catch is obtained by small boats fishing nearer the shore. The shore fishermen go out in the morning and return the same evening, fishing along the coast some 10 to 15 miles south of San Diego, and about the same distance north from Point Loma, at the entrance to the harbor of San Diego.

Chinese junks were formerly much used by the Chinese fishermen of San Diego County. In 1888 thirteen of various sizes were engaged in fishing. Year by year the Chinese have been withdrawing from the business, deeming it too hazardous on account of the danger from seizure by the Mexican Government for illegal fishing, and the possibility of not being permitted to reenter the United States. The junk fishermen, sailing under no flag, have been obliged to pay alien port charges, which materially reduced the profits of the business. In a

few cases the junks have been sold to American fishermen, the numbers by which they were known to the customs officials being supplanted by names. The junks used in San Diego County have declined from 13 used in 1888, 6 in 1889 and 1890, to 1 in 1893.

The shore fisheries of this county are carried on from small cat, sloop, or schooner rigged boats, carrying a crew of two men, who reside in San Diego and market their catch in that city. A small camp of Portuguese fishermen is found at La Playa, on the side of the bay opposite San Diego. These fishermen man their boats singly, and cure all of their catch, most of which is pickled for the Sandwich Islands trade. Of the quantity pickled, about three-fourths are albacore, one-eighth bonito, and one-eighth yellow-tail. The entire catch is taken by trolling. When fishing each boat uses four 15-fathom lines, each provided with a single hook. Just above the hook a decoy bait is fastened consisting of a piece of bone sometimes cut to resemble a small fish, but in most cases simply a narrow fragment without definite shape.

In the vessel fishery the same kinds of lines are employed, although eight instead of four are used by each craft. The lines are fished from the sides of the vessels, being rigged on poles in a manner similar to that employed in the mackerel fishery of the Atlantic coast many years ago.

In hand-lining the men use what may be designated a reverse trawl, not noticed elsewhere in the United States. The line is from 100 to 150 fathoms long and is provided with 25 to 50 hooks attached to gangings, which in turn are fastened to the main line at intervals of a foot apart, beginning at the bottom. The hooks are baited with either fresh or salted fish. Such lines are used from the sides of the vessels in from 15 to 100 fathoms of water. The fishermen seem pleased with this rig, and comment on its superiority over other forms of lines. Having dropped the line over the side of the vessel to the bottom, they have a string of baited hooks suspended that attract the fish much more effectively than would be the case with a single hook or a series of hooks arranged on the ordinary trawl. As soon as the line reaches the bottom the fishermen begin to draw it in and the fish follow it toward the surface. Often as many as half the hooks are found to have fish on them.

The fishermen report no scarcity of fish on the grounds adjacent to the Bay of San Diego, but few fish are now caught inside of the bay, where fine fishing was formerly enjoyed. The city sewage and the dumping of city refuse and garbage just outside of the harbor have, in the opinion of the fishermen, prevented the fish from entering the bay.

In September, 1891, an experimental shipment of 3,660 pounds of pickled fish was made to the Sandwich Islands. The fish met with such favor that the business rapidly increased, until in 1892 the fish so shipped amounted to 34,300 pounds. The largest part of the pickled fish consists of albacore, which are taken in abundance at all seasons of the year, and range in size from 30 to 70 pounds. The principal part of the catch is taken by trolling on the grounds some 10 miles southwest from Point Loma. The fish intended for the Sandwich

Islands trade are prepared as follows: After the removal of the head and viscera, the fish, without being split, are cut transversely into slices 1 to 1½ inches thick, which are thrown into vats of strong pickle, and after being thoroughly cured are packed into barrels and half-barrels for shipment.

Among the invertebrate products of the fisheries of this county the crawfish, or the spiny lobster, is most important. This crustacean occurs in great abundance and is taken in pots and drop nets of various kinds. The pots used by one firm of fishermen are unique in being made of iron, to better withstand the heavy swell and rough sea. Their general style is similar to the traps used by the lobster fishermen of Massachusetts. The frame is constructed of ¾-inch gas-pipe, the body of galvanized-iron wire, twine being used at the ends in the construction of the funnels. These pots are 20 inches square and 4 feet long. It is claimed that they will emerge in good shape from usage that would totally destroy the ordinary lobster pots. They were first used during the winter of 1893.

The business of taking abalones continues of some importance. These mollusks appear to have increased to some extent during the past few years, owing to the discontinuance of the Chinese fisheries, the low prices received for shells and meat affording no inducement to white fishermen to undertake the business.

ORANGE COUNTY.

This is a county recently formed from parts of Los Angeles and other adjacent counties. The principal center is Newport, which was formerly included in Los Angeles County. The fisheries consist in the operations of a few fishermen located at Newport. The catch in 1892 amounted to about 75,000 pounds, which was hauled in teams to Santa Ana, and sent thence by express to Los Angeles.

LOS ANGELES COUNTY.

The fisheries of this county present few changes in methods compared with the conditions found in the previous investigation. There has, however, been quite an increase in the extent of the industry, and it is probable that the next few years will witness a still further augmentation. New and competing lines of railroad have been opened up, freight rates have been reduced, and new fishing stations have been established. The centers in this county from which commercial fishing is now prosecuted are Redondo Beach, Ballona, Santa Monica, Long Beach, San Pedro, and Wilmington.

Redondo Beach, located 22 miles from Los Angeles, was first reached by railroad in November, 1889. Previous to the construction of this road the few fishermen at this point sent their catch by teams to Los Angeles. A marked increase in the important fisheries has ensued since the establishment of rail communication with Los Angeles, the catch being 51,700 pounds in 1889, and 181,905 pounds in 1892. Fishing is here done by means of bag nets, gill nets, and hand lines, which are

operated along the beach from small boats. There being no harbor of shelter, in stormy weather the boats and fishing gear are hauled high up on the beach. Fish are generally abundant and in large variety, and the fishermen have no difficulty in speedily filling their dories.

At Ballona, located 8 miles north of Redondo Beach, four American fishermen plied their vocation in 1889, 1890, and 1891, but abandoned the business the following year. The catch averaged about 30,000 pounds annually. Two other small fishing-camps are located $2\frac{1}{2}$ and 6 miles, respectively, to the south of Redondo Beach.

The fishing business of Santa Monica is limited, the annual shipments and local consumption aggregating only 75,000 to 100,000 pounds.

From Long Beach 30,000 to 35,000 pounds of fresh fish are annually sent by express to Los Angeles by fishermen living at San Pedro and Wilmington, but taking their fish off Long Beach. San Pedro, with its safe harbor and good rail and steamboat facilities, as well as its nearness to the fishing-grounds, continues to be the chief fishing center in Los Angeles County. The fisheries have shown a steady increase, largely on account of reduced rates for railroad transportation.

Large shipments of fresh, pickled, and dry fish are sent from this point to San Francisco, Los Angeles, and other points. The total quantities of fishery products sent from this place during the four years ending 1892 were as follows:

Years.	Pounds.	Value.
1889.....	490,370	\$17,508
1890.....	547,350	20,702
1891.....	505,325	19,278
1892.....	650,355	24,444

Wilmington, by virtue of its shipping advantages, is the second point of fishing importance in Los Angeles County. The quantities of fresh and salt products distributed from this point during the years named were as follows:

Years.	By express.	By freight.	By team.	Total.
	Pounds.	Pounds.	Pounds.	Pounds.
1889.....	131,323	34,645	192,125	358,133
1890.....	129,100	18,548	110,415	258,063
1891.....	182,979	323,268	35,390	570,403
1892.....	98,451	223,045	30,350	312,446

The shipments by express and team consisted of fresh fish sent to Los Angeles. The shipments by freight were salt fish, abalones, and sea-lion pelts. In March, 1891, a firm located at this place began the extensive curing of fish. The business consisted chiefly in pickling mackerel and barracuda and in packing sardines in kegs and small packages. In March, 1892, the curing establishment was burned and not rebuilt, this fact accounting for the diminution in the catch of this county in 1892 as compared with 1891.

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The quantities of cured fish shipped from Wilmington in the years 1889 to 1892, inclusive, were as follows:

Species.	1889.	1890.	1891.	1892.
	Pounds.	Pounds.	Pounds.	Pounds.
Mackerel	9,023	9,050	175,229	100,457
Sardines	2,256	2,265	48,897	37,364
Barracuda	6,795	6,794	131,421	82,094
Total	18,074	18,119	355,458	219,915

Additional shipments of prepared products were as follows:

Products.	1889.	1890.	1891.	1892.
Abalone meat	2,179	430	435	.....
Abalone shells	12,460	.....	1,975	.....
Sea-lion pelts	11,000	.....	.....	4,130
Sea-lion oil	960	960	.....	.....

Los Angeles, the principal community in the county, has no fisheries, but is the chief distributing-point for fishery products caught in the waters of the county and consumed in many of the interior towns of southern California. Nearly all the fresh fish shipped from the different fishing stations of the county is sent by rail or team to the wholesale and retail dealers of Los Angeles. A somewhat unusual feature of the business is the contracting by the dealers for all the fish caught by the fishermen at a uniform price per pound, usually 4 cents, regardless of the different species. Dealers in Los Angeles are experimenting in the smoking, pickling, and canning of several of the desirable food-fishes found on the coast of the county. The barracuda have been smoked and pronounced by experts equal to finnan haddies, of which considerable quantities were previously imported from the East. The bull's-eye mackerel has been pickled to some extent; this is a very good food-fish in a fresh condition, but owing to the deficiency of fat in its flesh it does not make a satisfactory pickled fish.

Some sardines of excellent quality have been packed in oil, mustard, and other ways common to the trade. In the vicinity of San Pedro and Santa Catalina Island, sardines are, in their season, found in large quantities. During February, March, and April of each year small sardines are usually abundant and in fine condition for canning. In May and June the larger sardines arrive and appear to crowd out the fish of smaller size. In July and August the large fish withdraw and the small fish again become plentiful. Up to August the fish are generally in fine condition, but after that date at times the small fish are usually of poor quality for canning. The larger sardines found in this part of the State are somewhat smaller in size than those occurring in San Francisco Bay, being of the size most suitable for packing in half-pound cans in mustard and spices. There appears to be a bright future for the sardine industry in this county, and the expansion of the business may be confidently expected during the next few years.

VENTURA COUNTY.

Less than half a dozen fishermen, with headquarters at Ventura, represent the fishing industry of this county. Fish are abundant, and the fishing business could no doubt be largely increased with profit to the producer and benefit to the people of the interior, but at the present time the entire catch is used locally. A branch of the Southern Pacific Railroad connects Ventura with Los Angeles. Within comparatively few years this section of the State has rapidly developed and the valleys have been settled by farmers and fruit-growers.

SANTA BARBARA COUNTY.

The fisheries of this county are prosecuted from Santa Barbara and the adjacent islands, and present few new features as compared with 1888. The branches of the fishing industry here followed are the taking of the shore food-fishes, the hunting of sea otters and sea lions, and the utilization of abalones and algae.

Fish are abundant at all seasons and the weather is mild and favorable for fishing throughout the year. The extent of the fisheries is, however, quite limited and does not to any extent represent the resources of the county. The few fishermen here, mainly Austrians and Chinese, make a good living with little exertion, carrying on their business only when the weather is perfect and they are so disposed. Most of the catch is consumed locally, the demand being considerable during the winter months, when thousands of visitors and tourists are found in this section. In summer but small quantities of fish are taken.

Three camps of fishermen and sea-lion hunters are located on the islands of Santa Cruz and Santa Rosa, the fishermen being Americans and Chinese. The former give attention to sea lions and sea otters, while the Chinese take most of the algae and abalones, and prepare the dry fish which are exported.

Sea lions are taken at San Miguel and Flea Islands and on Richardson's Rock. They are hunted for their oil, which brings about 40 cents per gallon, and their hides, which are worth about 4 cents per pound. The skins are tanned and make serviceable leather. Many of the sea lions are of large size. Of late years there has been quite a demand for live specimens to be placed in public parks and gardens in some of the eastern cities, and a considerable number have also been shipped alive to Europe. In 1891, 34 sea lions, weighing 9,580 pounds, were shipped east from this county, and in the following year 17, weighing 6,470 pounds, were so disposed of. The sea lions sought for their oil and hides are killed by means of guns, while those captured alive are taken by throwing a lasso over their heads.

Six American fishermen in three boats hunt the sea otters around the islands of San Miguel, Santa Rosa, and San Nicholas. The number killed is quite small and the animals are growing scarcer each year. Thirty were taken in 1889, 20 in 1890, 12 in 1891, and 8 in 1892, the pelts having an average value to the hunters of \$150.

Of late years abalones have been more abundant. The low price of shells which had for some time prevailed offered small inducement for even the frugal Chinese to take these mollusks, which consequently had an opportunity to increase. The Chinese gather from the rocks large quantities of algæ, which they dry, pack in bales, and export to China, where it is used in making soups. During 1892 13,490 pounds of dried algæ were shipped from Santa Barbara.

SAN LUIS OBISPO COUNTY.

Compared with the extent of the fisheries shown in the previous report the fishing industry of this county has undergone a slight increase, as gauged by the quantity and value of the products taken. Port Harford, with the steamboat and railroad connections, is the most important of the several fishing stations of the county, the others being located at Morro and Cazucos, 15 and 21 miles, respectively, north of Port Harford, and at San Simeon, a shore whaling station some 20 miles farther north.

The catch of food-fish in 1892 was unusually light, owing to scarcity of mackerel and barracuda; the catch of the former at Port Harford was 105,000 pounds in 1891 and only 7,300 pounds in 1892, the catch of barracuda falling off from 50,000 pounds to 750 pounds.

In close proximity to Port Harford are Pecho Rock and Lion Rock, which are favorite resorts for a large number of sea lions, which are hunted for their pelts and oil. The extent of this branch of the fisheries in the years 1890, 1891, and 1892 was as follows:

Years.	Sea lions killed.	Pelts.		OIL.	
		Pounds.	Value.	Gallons.	Value.
1890	53	2,577	\$143	292	\$73
1891	123	5,978	359	723	183
1892	95	6,412	326	522	130

The shore whale fishery, which was at one time carried on with considerable activity from a number of stations along the California coast, is now restricted to the limited operations of a few fishermen at San Simeon, at the northern end of this county. The results of the business during the past four years were as follows:

Years.	Whales killed.	Oil made.	
		Gallons.	Value.
1890	5	4,000	\$1,000
1891	7	5,000	2,000
1892	7	5,000	2,000
1893	5	4,000	1,000

MONTEREY COUNTY.

The fisheries of this county have a peculiar interest in that Monterey Bay, the principal fishing-ground, represents the limit of migration of many fishes; shad and salmon, for instance, are here found in some numbers, but do not occur south of Monterey Bay, while a large variety

of fish annually migrate northward as far as this section which are seldom found in any abundance in higher latitudes. Among the latter are the mackerel, bonito, albacore, and barracuda. The fishermen of this county usually find a great abundance of fish and have the choice of a larger number of species than is found elsewhere on the west coast. The other economic water products of this county consist chiefly of squid and algæ. With few exceptions the fishermen are Portuguese or Chinese, the latter comprising two-thirds of the fishing population. Most of the Portuguese are naturalized citizens.

Nearly all of the catch of both whites and Chinese is sent by steamer or rail to San Francisco. The squid and dry fish shipped by the Chinese are in large part reshipped to the Sandwich Islands or China. The quantities of fresh fish sent to market by the white and Chinese fishermen of this county were somewhat less in 1892 than during the three previous years, as shown in the following table. The species shipped are specified in the detailed tables elsewhere presented.

Statement of fresh fish shipped to San Francisco by fishermen of Monterey County.

Fishermen.	1889.	1890.	1891.	1892.
	Pounds.	Pounds.	Pounds.	Pounds.
White	975, 597	1, 180, 923	925, 335	972, 129
Chinese	345, 849	360, 250	157, 015	190, 390
Total	1, 325, 356	1, 500, 213	982, 353	871, 509

The following shipments were also made by the Chinese fishermen, consisting of dry fish, squid, and abalones and abalone shells, and algæ:

Products.	1889.	1890.	1891.	1892.
	Pounds.	Pounds.	Pounds.	Pounds.
Dry fish	102, 000	84, 000	61, 240	65, 820
Dry squid	468, 000	258, 000	300, 780	307, 625
Dry abalones	1, 150	1, 300	900	1, 200
Abalone shells	2, 700	3, 160	2, 800	2, 854
Algæ	5, 000	6, 500	6, 500	14, 800
Total	579, 650	330, 900	372, 300	449, 479

SANTA CRUZ COUNTY.

The fisheries of Santa Cruz County present no new features as compared with the conditions recorded in the last report. The quantity of fish taken shows a small increase each year, but the industry may be regarded as only imperfectly developed. Shad are found along the coast of this county, but do not appear to be undergoing the marked increase in numbers which is witnessed in the more northern counties of the State. In 1889 20,000 pounds were taken, and in 1892 the catch was 35,000 pounds. Salmon are also caught in limited quantities each year. The few fresh-water streams entering the ocean on this part of the coast probably accounts for the small increase in shad and

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salmon. The bulk of the catch consists of flounders, rockfish, smelt, and sturgeon, and nearly the entire yield is sent fresh to San Francisco. The shipments of fresh fish during each of the four years ending 1892 were as follows:

Years.	Pounds.	Value.
1889.....	249, 980	\$9, 998
1890.....	310, 776	12, 481
1891.....	330, 694	13, 226
1892.....	354, 213	14, 169

SAN FRANCISCO COUNTY AND VICINITY.

By far the most extensive fisheries of California are located at San Francisco, which has the distinction of being the most important fishing center on the Pacific Coast of North America. Besides maintaining valuable fisheries, the city is the principal market for the product of nearly every county in the State and is in very close relation with the adjacent counties of Contra Costa, Solano, Sonoma, and Marin.

The branches which give prominence to this region are the general market fisheries of San Francisco Bay and tributaries and of the adjacent ocean, the cod fishery, the whale fishery, the fur-seal and sea-otter fishery, the oyster industry, and the Chinese fisheries. These have been so fully described in the previous report that it is only necessary at this time to record their extent and the few changes which have ensued.

PHYSICAL FEATURES OF SAN FRANCISCO BAY AND TRIBUTARIES.

A large part of the salt-water and fresh-water fish received in San Francisco is taken in San Francisco Bay and its tributary bays and streams. This inland water area is of large extent and well adapted to the support of a large amount and variety of animal life. The quantity of fishery products annually withdrawn from these waters is enormous, but it is doubtful if the full resources are utilized or appreciated.

In a general way the dimensions of San Francisco Bay and the smaller bays connected therewith may be stated as follows: From the southern end of San Francisco Bay, bordering on Santa Clara County, to San Francisco is a distance of 25 miles, the width of the bay being from 2 to 10 miles. Between San Francisco and the entrance of San Pablo Bay the distance is 11 miles; San Pablo Bay is 10 miles long and from 8 to 10 miles wide. Karquines Strait, which connects San Pablo Bay with Suisun Bay, is 8 miles long and $\frac{1}{2}$ to 1 mile wide. Suisun Bay is 16 miles long and from $\frac{1}{2}$ to 6 miles wide. The total length of these connected waters is about 70 miles.

At the northern end of Suisun Bay, in Solano County, the two largest rivers in the State have their outlets. A peculiar feature of these rivers, probably not found elsewhere in the United States, is the relation existing between their respective sources and outlets. The San

Joaquin takes its rise in the semitropical section of the southern part of the State, and flows northward hundreds of miles through a warm region. The Sacramento, with its head waters among the perpetually snow-covered Sierra Nevada Mountains, flows south many hundred miles, and, through numerous passages, mingles with the San Joaquin and is lost in the tide waters of the bay. These two streams constantly carry with them a large amount of minute animal and vegetable life, much of which must find a congenial home in San Francisco Bay and furnish a large and varied quantity of food for the fish life of the fresh, brackish, and salt waters.

Another interesting feature of the bay is the almost uniform temperature of the water, there being only a few degrees variation at any season of the year. That the conditions are extremely favorable to the support of aquatic life is demonstrated in the rapid increase and permanent residence of the several fine food-fishes introduced from the Atlantic Coast by the Government. Some of the fishes thus acclimatized are naturally anadromous, but in San Francisco Bay, contrary to their usually migratory habits, they do not appear to have any desire to spend much of any of their existence in the ocean.

Another feature which has its influence upon the quantity of animal life present in San Francisco Bay is the absence of fishing banks or submerged chains of mountains off the coast of California adjacent to the Golden Gate. Fishing-grounds such as are found off the coast of the Atlantic States do not occur within many hundred miles of the California coast. It may therefore be assumed that during very stormy weather numbers of the near-shore marine fishes would seek food and shelter inside the Golden Gate, where, finding favorable conditions, many remain.

THE MARKET FISHERIES.

The fresh-fish business of San Francisco presents few changes or improvements. Fish are handled in the same primitive manner often described and always noticed by everyone that takes any interest in visiting the fish markets. The fish are seldom dressed and but a small amount of ice is used. Several of the dealers united as one company during 1892 and have made quite an improvement in having larger and more inviting quarters in which to transact their business. Six days in the week, every week in the year, with the exception of a few stormy days, the little lateen-rigged fishing boats sail out in the morning for the same fishing-grounds, with the same kind of fishing gear, nets, or trawls; with little trouble they catch the same varieties of fish, and the evening finds them back in their fishing dock.

The use of steamers, recommended in a previous report, in place of sail vessels is slowly taking place. The first steamer to engage in the market fisheries began work in or about 1885. This vessel was a tug that combined towing part of the time with fishing, when not otherwise engaged. During 1891 several of the wholesale firms united and added two steamers to the business, and in 1892 one more was added,

making four steam vessels then in the market fishery. Some of these steamers are continually engaged in the fishing business, and at most times all four of them are. They leave the fishing dock early every morning, except Saturday, which is their day of rest, made so from the next day being Sunday, in which they could not dispose of their catch, as they return in the evening of the same day they leave. The steamers leave the fishing dock and soon pass out through the Golden Gate; turning north, a run of a few hours brings them to their usual fishing-grounds in Drake Bay, where the paranzella or drag net is soon in the water, and the steamer slowly drags it along the bottom until it is thought best to reel it in, empty the catch, and repeat the operation.

The steamer's crew consists of captain, engineer, fireman, and four to six fishermen, who are hired by the month.

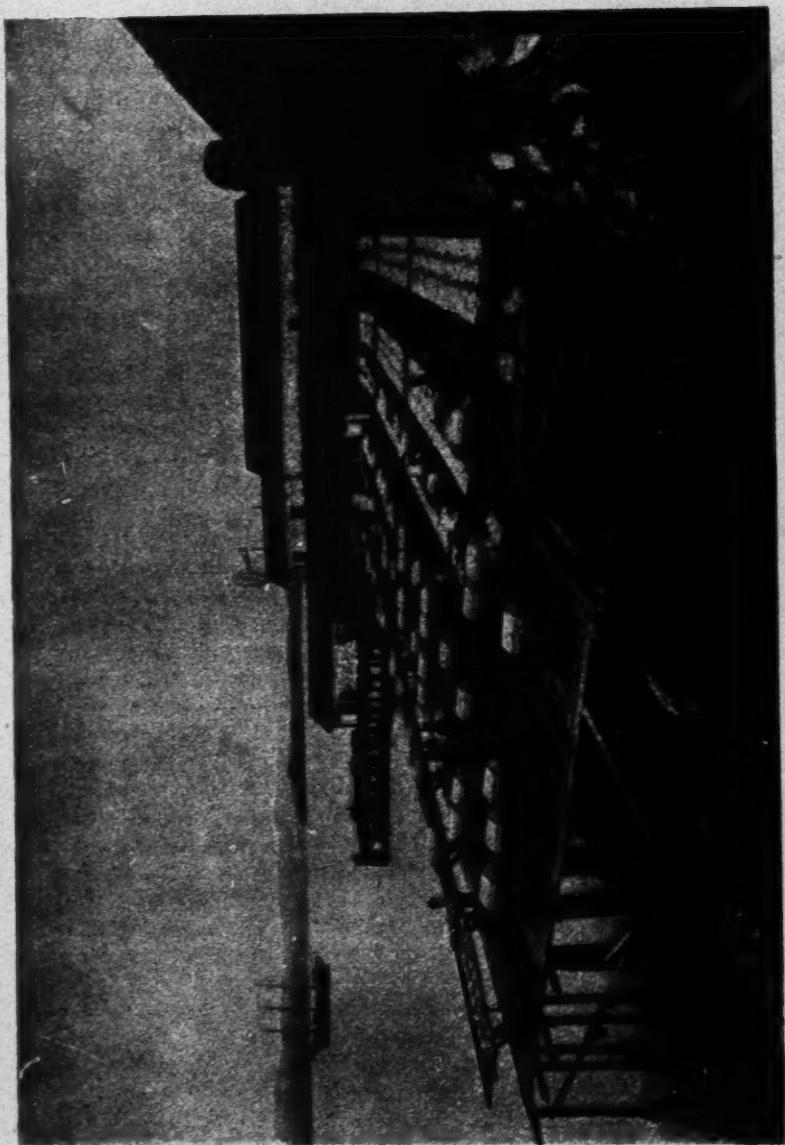
The catch consists mostly of flounders and the numerous varieties of flatfish, with a small amount of many other kinds of bottom fish, some of which are saved and others thrown overboard quite likely to be recought the following day, as nearly the same fishing-ground is gone over day after day, and generally the catch is equally good.

One good result of the use of steamers is that the catch can always be landed fresh and only a few hours at most from the time the fish were freely swimming in the ocean.

The many varieties of salt-water fish caught by the market fishermen outside of the Golden Gate have as a general thing been of an average abundance and ample for the needs of the market. Of the anadromous fishes, shad and striped bass have wonderfully increased in the market. The price of the latter has fallen from 75 cents or \$1 a pound, which was freely paid in 1889, to 10 to 15 cents a pound in 1892. Shad, which a few years after their introduction brought \$5 each, have year by year largely increased in numbers, and the price has fallen in the market as low as 25 cents for two fish, or about 3 cents a pound, the fishermen often receiving as little as a cent a pound. Salmon have in few instances been very plentiful, but the season's catches on the whole have not been satisfactory. The tables by counties will show the catch of these and all other species for the past four years.

A conspicuous part of the fresh-fish supply of San Francisco is taken in San Francisco Bay and the adjoining bays to the north. Between San Francisco and the southern end of the bay the principal fisheries carried on are for oysters, shrimp, herring, and smelt. At the extreme end, and for a few miles above on each side, are the only cultivated oyster beds in the State. These embrace several hundred acres. At many places in San Francisco Bay may be found the remains of native oyster beds in the shape of very small shells. Where native oysters are found alive their size is too small to render them of any commercial value. Investigations made by the United States Fish Commission disclosed the existence of a number of these native oyster beds that were not previously known, most of which were south of San Francisco, although a few were in the vicinity of San Pablo Bay. On some





COD CURING STATION, PESCADO LANDING, CALIFORNIA.

of these old beds were found numbers of medium-sized eastern oysters in good condition. These were probably the outcome of spat that had drifted with the tide from the cultivated beds of eastern oysters.

Next in importance to the oyster industry is the shrimp fishery carried on by the Chinese. At several points on the west side of the southern part of the bay are located extensive camps of the Chinese fishermen, while in close proximity to their camps along the borders of the bay and as far out as the main channel may be seen hundreds of their shrimp nets fastened to stakes.

From the middle of January to the middle of June smelt are more or less abundant and taken with nets along the west shore and along the border of the channel. From November to February herring and smelt are netted on the east side of the bay. From San Francisco to a distance 5 miles south smelt are caught during July and August, and a short distance south on the east side of the bay smelt and herring are found in December and January.

The foregoing comprise all of the principal fishing done within that part of the bay south of San Francisco. Just inside the Golden Gate primitive traps to the number of several hundred are fished for crabs. The first of the winter catch of herring is taken in Richardson Bay north of the Golden Gate, in which is located one of the large stations for the receiving and curing of cod. Another important station connected with the cod fishery is found a few miles distant on the main bay, these comprising all the firms that are engaged in the cod fishery of California. From the harbor of San Francisco to the upper extremity of Suisun Bay salmon, shad, and striped bass are netted from April to the middle of September, the principal part of the run of fish being taken in or near the channel. On each side of the entrance to San Pablo Bay the Chinese fishermen, whose operations were fully noticed in the previous report, continue to have their camps and follow their important fisheries for shrimp and the smaller species of bottom fish. On the west side of San Pablo Bay sturgeon and flounders are taken between February and May.

The fisheries of Suisun Bay are limited to the taking of salmon, shad, and striped bass.

THE PACIFIC COD FISHERY.

This branch of the Pacific fisheries is making history, although in many respects differing from the much older one of the Atlantic. Since the landing of the first cargo in 1864, up to 1893, the few firms engaged in the catching and curing of codfish have seen many fluctuations and changes in the business. The increase which the industry has undergone has only been reached by seeking the widely separated and distant markets of the Atlantic Coast, the Sandwich Islands, and Australia. Changes have taken place in the mode of preparing the fish for market. A small amount is yet called for in the old style, hard dried with skin on and tied up in bundles of 75 to 100 pounds; but

most of the fish after curing are stripped of their skins, cut up, and packed as boneless fish. This modern way of placing cod on the market has been most favorably received in Australia, where the American boneless cod has nearly driven the hard-cured "stock fish" of northern Europe from the market.

Changes are taking place in the grounds resorted to by fishermen. The distant Okhotak Sea and far eastern waters, where attention was first called to the cod of the Pacific, have nearly been abandoned by American fishermen for the nearer home fishing-grounds of Bering Sea, and the vessel fisheries of the latter are giving way to the establishment of permanent fishing stations on the islands bordering Bering Sea. Both American and native fishermen remain at these stations and fish on the adjacent banks, which are quickly and easily reached by small boats. The fares are soon taken, and on returning to the station the fish are dressed, salted, and packed away until vessels from San Francisco arrive. These bring salt for curing and supplies for the men, and return with loads of kench-cured fish to be unloaded at the home station, and there prepared as boneless cod.

Firms at San Francisco engaged in the cod fishery have branch stations at the following points on the Shumagin Islands: Sand Point, Red Cove, Company Harbor, Squaw Harbor, Ikaluk, Chichagof Bay, Henderson Island, Unga Island, Nelson Island, Pirate Cove, Sanborn, Rasataka, Johnson's Harbor, and Port Stanley.

The San Francisco cod fleet in Okhotsk Sea in 1889 and 1890 consisted of two brigs of 618 tons, whose aggregate catch was 1,168,484 pounds and 1,123,941 pounds, respectively. During 1891 no American cod vessels visited that region. In 1892 a three-masted schooner of 369 tons took 516,000 pounds of cod.

The extent of the Bering Sea cod fishery carried on by San Francisco vessels during the four years beginning 1889 was as follows, two small schooners being employed in transporting the catch:

Years.	No. of vessels.		Tonnage.	Catch.	
	Brigs.	Schooners.		Pounds.	Value.
1889.....	1	2	208	294,940	\$7,374
1890.....	2	2	376	655,138	16,378
1891.....	4	3	1,120	2,114,711	52,868
1892.....	4	2	994	1,742,155	43,554

The aggregate receipts of salt cod by San Francisco firms, specified by fishing-grounds, are shown for four years in the following table:

Grounds.	1889.	1890.	1891.	1892.
	Pounds.	Pounds.	Pounds.	Pounds.
Okhotak Sea.....	1,168,484	1,123,941		516,000
Bering Sea.....	294,940	655,138	2,114,711	1,742,155
Islands of Alaska.....	1,134,775	1,686,602	1,637,000	2,208,035
Total.....	2,598,199	2,465,681	3,751,711	4,466,190

Vessels going to Okhotsk Sea on cod-fishing trips usually leave San Francisco about May 1 and return home by the latter part of September. The start for Bering Sea is made early in April and the home port is reached toward the end of August. There is considerable difference in the size and value of the codfish found in different parts of Bering Sea. As time passes and more knowledge of the extensive fishing banks is gained, fish of larger size, with thicker flesh and of better quality, are taken. A decided improvement in the quality of the catch is noticed compared with a few years back.

On entering Bering Sea vessels first anchor and begin fishing on Slime Bank, at the entrance to Bristol Bay. Cod are not always plentiful in this locality and, if scarce, a move is made to grounds off Port Möller, which is the region resorted to during June and July. It is fished over for some 10 miles northwest and southeast of Port Möller. Occasionally two trips are made, or a vessel will start later than the date mentioned; if so, the catch during August and September is obtained farther north, off Cape Pierce and Hagemeister Island.

THE PELAGIC FUR-SEAL AND SEA-OTTER FISHERY.

The high price commanded by seal pelts in recent years and the almost fabulous sums received for the sea-otter skins, incidentally obtained in the same fishery, have resulted in a marked increase in this branch of the San Francisco fisheries. The size of the fleet increased from six vessels in 1889 to eighteen in 1892, with a corresponding advance in the yield of fur seals, although the number of otters killed was in almost inverse ratio to the size of the fleet.

In addition to the home fleet, vessels from Oregon and Washington come to San Francisco for outfits and crews. Early in January the vessels are busy making ready, and by the middle of February all have sailed. On leaving San Francisco on a sealing trip vessels usually go but a short distance, some 50 miles west or southwest, before the hunting begins. Sometimes the day after leaving port seals are fallen in with, quite a catch is made, and the vessels will be back in port, having been away less than forty-eight hours. The first to sail in 1892 left December 28, and returned January 20, 1893, with 207 skins. Again, not meeting with the moving herds, a vessel will cruise along the southern coast or to the southwest for a few hundred miles, and then, heading to the north, will work up the coast. The business is at the best quite uncertain. Some vessels at the close of the season have a fine balance, others little, if anything, and may show quite a loss.

The sealing crews as a rule ship on a lay or share, which varies somewhat with the different vessels. The captain usually has a private agreement at so much a month, with or without a share or percentage. The first mate receives one-fifteenth of the stock or \$65 a month, or \$10 a month and 40 cents for each seal taken by the boat he is in. The second mate, if by the month, gets \$30 to \$45. The cook and steward, combined in one, is paid \$45 to \$50 a month. The cabin boy receives

\$15 to \$20 a month. The seamen, if on a lay, are entitled to one-hundredth of the stock, but most of them receive 50 cents for each seal taken by the boat in which they are. Hunters, so known, are the men who shoot the seals; they usually receive \$2 for each seal and \$6 to \$7 for each otter that they may kill and secure. The owners of the vessels furnish all food, guns, ammunition, and other needed supplies, and in case seals are not found they are the ones to suffer the loss, the crew being out their time only.

The extent of this fishery from 1889 to 1892, inclusive, is shown in condensed form in the following table:

The pelagic fur-seal and sea-otter fleet of San Francisco.

Years.	Vessels.		Seal skins taken.		Sea-otter skins taken.	
	No.	Tonnage.	No.	Value.	No.	Value.
1889.....	8	377.79	1,661	\$15,219	277	\$27,700
1890.....	9	633.37	5,618	\$6,816	273	27,200
1891.....	16	1,153.56	8,945	134,220	151	30,200
1892.....	18	1,306.36	14,719	167,526	227	34,950

The average number of seals and sea otters taken by each vessel varied greatly during the four years named, and shows the uncertainty attending the prosecution of this fishery. Some vessels returned home without having taken a single pelt, while others obtained as many as 2,600 skins. The following brief statement of averages, based on the foregoing table, shows some interesting points:

Years.	Seal skins.		Sea-otter skins.	
	Average number to a vessel.	Average stock to a vessel.	Average number to a vessel.	Average stock to a vessel.
1889.....	293	\$3,586	46	\$4,617
1890.....	646	7,757	30	2,003
1891.....	559	8,389	10	1,867
1892.....	817	10,476	12	1,943

THE WHALE FISHERY.

Probably no other business on the Pacific Coast with anything like the capital invested is followed with the uncertainty of the Arctic whale fishery. One year may witness a remunerative fishery, to be followed the next season with heavy loss of life, money, and property. The fishery continues to center at San Francisco, which, in addition to having a large local fleet, is the permanent headquarters of numbers of vessels belonging in New Bedford, Mass.

With the low prices received for oil, the whale fishery would soon come to an end were it not for the more valuable whalebone. Often during recent years only the bone has been saved if other whales are in sight, the remainder of the carcass being cast adrift. The market price of whalebone has ruled high, with wide fluctuations from time to

time. During 1891 the price varied from \$4 to \$5 a pound for Arctic bone; in April, 1891, it had advanced to \$6.50, and in October had dropped to \$5, closing in December at \$5.75. The opening price in 1892 was \$5.62, with sales up to \$6; as the season wore on it declined to \$5, and later in the year to \$4. During the early fall, news of the success or failure of the Arctic fishery is anxiously looked for, and the market is governed by the same. The prices given are eastern quotations, and do not make much difference to the seamen engaged in the taking of the whales; although they ship on a lay, or share, the price of whalebone and oil is usually agreed on in advance.

The extent of the whaling business carried on by vessels owned at San Francisco is shown in condensed form in the following table:

Summary of the San Francisco whale fleet and its operations, 1890 to 1892.

Years.	Number of fishermen.	Vessels.				Advances to crews.
		Number.	Net tonnage.	Value.	Value of outfit.	
1890.....	1,000	32	8,174.61	\$572,000	\$376,297	\$112,135
1891.....	1,050	31	7,436.10	570,000	283,756	106,628
1892.....	1,240	38	8,983.18	648,500	302,000	126,026

Years.	Whalebone.		Sperm oil.		Whale oil.		Total value of catch.
	Pounds.	Value.	Gallons.	Value.	Gallons.	Value.	
1890.....	106,303	\$710,239	8,121	\$3,979	286,001	\$120,498	\$934,716
1891.....	218,781	1,177,043	2,472	2,356	223,866	106,627	1,286,026
1892.....	192,950	1,083,283	12,004	8,579	192,985	81,016	1,121,877

There is no fishery in the United States in which a more heterogeneous personnel is found than in the Pacific whale fishery. Nearly every State and every nation is represented, as will appear from the following tables based on the official shipping lists:

Table showing the nativity and nationality of the persons employed on the San Francisco whaling fleet in 1892.

Countries.	Nativity.	Nationality.	Countries.	Nativity.	Nationality.
United States.....	438	630	New Zealand.....	3	.....
Austria.....	6	1	Nova Scotia.....	11	.....
Australia.....	11	.....	Norway.....	50	28
Belgium.....	5	5	Portugal.....	110	79
China.....	3	3	Russia.....	14	15
Canada.....	13	.....	South America.....	14	8
Denmark.....	27	21	Spain.....	58	55
East Indies.....	2	181	Scotland.....	25	.....
England.....	115	181	Sandwich Islands.....	31	20
France.....	22	18	Switzerland.....	6	4
Germany.....	108	76	Sweden.....	60	40
Holland.....	11	6	St. Helena.....	6	.....
Italy.....	1	.....	United States of Colombia.....	2	2
Ireland.....	22	.....	West Indies.....	18	.....
Japan.....	6	8			
Mexico.....	4	4			
New Brunswick.....	2	.....			
			Total.....	1,240	1,340

* The nationality of the fishermen of the various British provinces is shown in the aggregate under the general head of England.

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Of the native-born citizens on the whaling vessels, the following States were represented to the extent shown:

States and Territories.	1893.	States and Territories.	1892.
Alabama.....	1	Minnesota.....	3
California.....	77	Missouri.....	9
Colorado.....	3	Montana.....	1
Connecticut.....	7	Nebraska.....	2
Delaware.....	2	Nevada.....	2
District of Columbia.....	6	North Carolina.....	2
Dakota.....	1	New York.....	77
Florida.....	3	New Jersey.....	2
Georgia.....	1	Ohio.....	10
Illinois.....	15	Oregon.....	4
Indiana.....	3	Pennsylvania.....	21
Iowa.....	6	Rhode Island.....	5
Kansas.....	2	Vermont.....	2
Maine.....	23	Virginia.....	3
Maryland.....	9	Wisconsin.....	3
Massachusetts.....	122	Total.....	438
Mississippi.....	1		
Michigan.....	6		

The names, rigs, and tonnage of the vessels constituting the fleet were as shown in the following table:

Name.	Rig.	Net tonnage.	Years engaged.		
			1890.	1891.	1892.
Alton.....	Sch...	84.30	x	x	x
Alexander.....	Brig..	128.33	x	x	x ^a
Bounding Billow.....	Bark..	228.23	x	x	x
Beluga.....	Str...	409.43	x	x	x
Balmora.....	Str...	389.67	x	x	x
Bonanza.....	Sch...	128.70	x	x	x
Biskely.....	Sch...	185.64			x
Bina.....	Bark..	251.71	x ^b		
M. F. Harriman.....	Str...	350.26	x	x	x
Grampine.....	Bark..	308.13	x	x	x ^c
Helen Mar.....	Bark..	337.38	x	x	x
Hunter.....	Bark..	165.96	x	x	x
Hidalgo.....	Sch...	107.07	x	x	x
Jane Gray.....	Bark..	331.38	x	x	x
John & Winthrop.....	Bark..	335.64	x	x	x ^c
John P. West.....	Bark..	330.96	x	x	x
James Allen.....	Str...	350.80	x	x	x
J. H. Freeman.....	Str...	220.93			x
Karikak.....	Bark..	312.28	x	x	x
Lydia.....	Bark..	243.44	x	x	x
Mary.....	Sch...	65.66	x	x	x
Mary H. Thomas.....	Str...	108.91	x	x	x
Mary D. Hume.....	Sch...	65.50	x	x	x
Nicotine.....	Str...	389.67	x	x	x
Narwhal.....	Bark..	305.43	x	x	x
Northern Light.....	Str...	462.59	x	x	x
Orea.....	Sch...	141.25	x	x	x
Rosario.....	Brig..	189.18			x
Percy Edward.....	Bark..	247.43	x	x	x
Stamboul.....	Bark..	307.24	x	x	x
Sea Breeze.....	Sch...	28.90	x ^d	x	x
Silver Wave.....	Str...	343.91	x	x	x
Thrasher.....	Bark..	353.97			x ^c
Tamariane.....	Brig..	256.50	x	x	x
W. H. Myer.....	Bark..	288.13	x	x	x
Wanderer.....					

^a Lost; crew saved.

^b Lost on St. Lawrence Island; crew saved.

^c Lost in Arctic ice; of the crew of 40 only 3 were saved.

^d Tender to the fleet.

^e Lost by going ashore at Sandwich Islands; 19 of the crew lost.

The whaling business carried on by New Bedford vessels making their headquarters at San Francisco is about half as extensive as that of the home fleet. The following condensed figures, applying to the years 1890, 1891, and 1892, show the prominent features of the fishery:



SHOOTING A BOMB LANCE INTO A WHALE.

Summary of the New Bedford whale fleet and its operations, 1890 to 1892.

Years.	Number of fishermen.	Vessels.				Advances to crews.
		Number.	Net tonnage.	Value.	Value of outfit.	
1890.....	622	17	5,661.96	\$197,900	\$186,900	\$61,500
1891.....	630	16	4,787.95	203,500	182,100	62,800
1892.....	645	17	4,880.33	217,500	194,000	63,400

Years.	Whalebone.		Sperm oil.		Whale oil.		Total value of catch.
	Pounds.	Value.	Gallons.	Value.	Gallons.	Value.	
1890.....	114,350	\$400,225	11,535	\$7,497	171,187	\$72,318	\$480,040
1891.....	91,700	412,050	9,700	6,093	139,137	65,205	484,736
1892.....	122,500	551,250	55,293	37,044	161,384	67,778	656,072

The nationality and nativity of the persons constituting the crews of the New Bedford whaling fleet operating in the North Pacific Ocean are exhibited in the following table:

Table showing the nativity and nationality of the persons employed on the New Bedford whaling fleet in 1892.

Countries.	Nativity.	Nationality.	Countries.	Nativity.	Nationality.
United States.....	220	292	Mexico.....	7	7
Austria.....	1	1	Norway.....	14	14
Australia.....	7	7	Nova Scotia.....	3	3
Africa.....	2	2	New Brunswick.....	3	3
Brazil.....	2	2	Portugal.....	93	93
Belgium.....	1	1	Peru.....	4	4
Canada.....	6	6	Poland.....	1	1
Chile.....	2	2	Russia.....	5	6
Denmark.....	2	2	Spain.....	73	69
England.....	23	73	Sweden.....	9	6
East Indies.....	7	13	Scotland.....	11	11
France.....	2	13	Sandwich Islands.....	29	29
Fiji Islands.....	1	21	St. Helena.....	6	6
Germany.....	50	21	Switzerland.....	3	3
Holland.....	6	6	United States of Colombia.....	2	2
Italy.....	1	1	West Indies.....	15	15
Ireland.....	14	3	Total.....	645	645
Japan.....	3	3			

* The nationality of the fishermen of the various British provinces is shown in the aggregate under the general head of England.

The States and Territories in which the native-born citizens belong are given in the following statement:

States and Territories.	1892.	States and Territories.	1892.
Alaska.....	2	New Hampshire.....	1
California.....	16	Nevada.....	1
Connecticut.....	3	North Carolina.....	1
District of Columbia.....	1	New Jersey.....	4
Florida.....	1	New Mexico.....	1
Illinois.....	2	Ohio.....	4
Indiana.....	2	Oregon.....	3
Iowa.....	2	Pennsylvania.....	20
Kansas.....	4	Rhode Island.....	7
Kentucky.....	2	Vermont.....	3
Maine.....	4	Virginia.....	3
Maryland.....	5	Wisconsin.....	2
Massachusetts.....	70	Washington.....	2
Michigan.....	2	Total.....	220
Missouri.....	4		
New York.....	30		

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The names, rig, and tonnage of the New Bedford whaling fleet are shown for the years 1890, 1891, and 1892 in the following table:

Name.	Rig.	Net tonnage.	Years engaged.		
			1890.	1891.	1892.
Alaska.....	Bark..	323.00	x	x	x
Andrew Hicks.....	Bark..	287.06	x	x	x
Alice Knowles.....	Bark..	287.04	x	x	x
Andrew Barker.....	Bark..	261.14	x	x	x
Belvedere.....	Str..	259.37	x	x	x
Chas. W. Morgan.....	Bark..	266.08	x	x	x
California.....	Bark..	348.25			x
Cape Horn Pigeon.....	Bark..	261.42	x	x	x
Frances A. Barstow.....	Brig..	121.19	x	x	x
Horatio.....	Bark..	321.53			x
Josephine.....	Bark..	264.54	x	x	x
Lagoda.....	Bark..	262.29	x ^a		
Mermaid.....	Bark..	266.05			x
Navarro.....	Str..	171.39			x
Ocean.....	Bark..	274.25	x ^b		
Reindeer.....	Bark..	319.62	x	x	x
Sea Ranger.....	Bark..	259.46	x	x	x
Tamariane.....	Bark..	353.67	x	x	
Triton.....	Bark..	251.60	x	x	x
William Baylis.....	Bark..	266.82	x	x	x
William Lewis.....	Str..	252.94	x	x ^a	

a Lost. b Condemned.

Data are at hand for a very interesting presentation of the number of each kind of whale taken during the years 1890, 1891, and 1892 by the vessels belonging in San Francisco and New Bedford, respectively. The variations in the comparative abundance of the different whales, as shown by the numbers killed, are suggestive and instructive:

Number and kind of whales taken in 1890, 1891, and 1892 by the American whaling fleet making headquarters at San Francisco.

Kinds of whales.	Vessels belonging at San Francisco.			Vessels belonging at New Bedford.			Total.		
	1890.	1891.	1892.	1890.	1891.	1892.	1890.	1891.	1892.
Right.....	42	59	14	19	33	16	61	92	30
Bowhead.....	66	106	107	46	30	52	112	136	159
Sperm.....	4	3	3	2	14	20	6	17	23
Humpback.....	1						1		
Total.....	113	168	134	67	77	88	180	225	212

THE OYSTER INDUSTRY.

The oyster industry centering at San Francisco is one of the most important branches of the fishing industry of California. San Francisco firms, with extensive beds of native and eastern oysters in San Francisco Bay, are the only planters of oysters in California. Each fall and spring seed oysters in car-load lots are brought from the Atlantic Coast and planted in the bay. Some years as many as 100 car-loads, averaging 90 barrels of seed oysters each, are transplanted. A limited amount of the small-sized native oysters are also brought from beds in Washington. The latter are planted solely to keep them fresh and near at hand when desired. If it were not for the constant planting of seed oysters the beds would soon be exhausted, the natural propagation not keeping up with the demand.

Seed oysters brought from the Atlantic remain on the beds from three to four years, during which time they grow to the average size of the oyster of like age on the Atlantic. The original flavor is retained, although planted on the same beds with the natives of Washington, which are widely known for their small size and peculiar strong copper flavor, which they retain when brought and planted in California.

Ten small sailing vessels are engaged in transporting the oysters, as needed, from the beds to San Francisco. On arriving at the city, the bulk of the oysters grown from Atlantic seed are opened, canned, and packed in ice, and are known to the trade as eastern oysters. They are distributed all over the west coast, meeting those from the Atlantic at Denver, Colo.

In addition to the opening and canning of eastern oysters, considerable business is done in supplying the large city demand for oysters in the shell. Both the eastern and native oysters show an improvement during the past few years; they have larger shell, plumper meat, and a better flavor. The only noteworthy feature since the more detailed report of 1889 is a slow but steady growth in the business.

There is room for an increase in the business, but to accomplish this the industry, as at present carried on, will require large capital, and several years would elapse before the seed would grow and returns be expected. The freight on the seed from the Atlantic is a large item in the expense of the business. Firms now engaged are reported as holding several thousand acres of ground adaptable for oyster-culture, but not so used.

The extent of the oyster industry of San Francisco during the years 1889 to 1892, inclusive, is shown in the following tables. The persons employed at the beds (105 in number) and on shore and the capital devoted to the business were the same each year.

Property and capital.

Items.	Value.
Vessels.....	\$15, 100
Shore property.....	100, 000
Oyster beds.....	100, 000
Cash capital.....	75, 000
Total.....	290, 100

Products.

Years.	Eastern oysters.		Native oysters.		Total.	
	Bushels.	Value.	Bushels.	Value.	Bushels.	Value.
1889.....	120, 000	\$480, 000	28, 150	\$91, 825	148, 150	\$571, 825
1890.....	125, 000	500, 000	26, 335	92, 137	151, 335	592, 137
1891.....	130, 000	520, 000	28, 130	98, 455	158, 130	618, 455
1892.....	140, 000	564, 000	32, 645	114, 267	172, 645	678, 267

SARDINE CANNING.

This branch of the fishing industry is yet in its infancy on the Pacific Coast. The Golden Gate Packing Company, of San Francisco, established in 1890, had up to 1892 the only sardine cannery on the coast. Sardines and anchovies are utilized. Those of small size were packed in oil in the usual quarter-pound cans; the larger fish were put up in round cans holding 1 and 2 pounds. The goods were of fine quality and met with a ready sale, but the quantity prepared was small. A number of causes, chief of which was the failure of sardines to enter San Francisco Bay in sufficient quantities, limited the pack and caused a suspension of the business in 1893, when the cannery was sold and removed to Los Angeles County, where sardines were reported to be in greater abundance. Of late years sardines have been very erratic in their appearance in San Francisco Bay. One year the fish for weeks at a time would be extremely plentiful, while during the next season they would scarcely be found at all. The quantities of fish packed during the three years 1890, 1891, and 1892 were as follows, 100 of the quarter-pound cans, 48 of the 1-pound cans, and 24 of the 2-pound cans being contained in each case:

Grades.	1890.	1891.	1892.
	<i>Cases.</i>	<i>Cases.</i>	<i>Cases.</i>
Quarter cils.....	2,000	7,000	10,000
One pound.....	5,000	2,000	.....
Two-pound.....	5,000	2,000	.....
Total.....	12,000	11,000	10,000

THE FISH TRADE OF SAN FRANCISCO.

The fresh-fish markets of San Francisco are interesting and in some respects unique. In them one may buy a single pound of fish or a car load, both wholesale and retail business being carried on at the same stand. About 12,000,000 pounds of fresh fish are handled annually, exclusive of those in the Chinese markets. Large quantities of oysters, clams, mussels, shrimp, and crabs are also sold.

The fish are received daily from the adjacent fishing-grounds visited by the home fishermen, and from the interior waters and coast towns by rail and steamship lines. The fresh and salt waters of the State are rich in quantity and variety of animal life, and fishery products from all over the State find their way to this market. It is said that over 275 species of fish are found in the waters of the State, although many of these are not used as food, except by the frugal Chinese, who rarely permit anything to go to waste.

The following table represents approximately the quantity and value of all of the important fish and other water products entering into the fresh-fish trade of San Francisco. Most of the products named may be found in the market at all seasons, selling at prices that are within the reach of all classes. Attention may be specially drawn to the figures for shad, striped bass, catfish, and carp, fishes which have been introduced from the east.

Table showing the extent of the fresh-fish trade of San Francisco in 1890, 1891, and 1892.

Species.	1890.		1891.		1892.	
	Quantity.	Retail value.	Quantity.	Retail value.	Quantity.	Retail value.
Fish:						
Anchovies.....pounds..	135,000	\$5,400	145,000	\$4,350	150,215	\$3,755
Barracuda.....do.....	120,000	10,800	150,000	12,000	75,000	6,750
Bonito.....do.....	95,000	5,700	110,000	6,600	95,000	10,450
Carp.....do.....	75,000	3,000	90,000	2,700	75,000	1,875
Catfish.....do.....	10,000	900	30,000	1,400	25,000	1,500
Cultus-cod.....do.....	150,000	10,500	190,000	11,400	200,000	10,000
Flatfish and flounders, pounds.....	1,415,960	112,176	1,341,038	80,482	1,057,208	66,298
Herring.....pounds.....	2,000,000	80,000	2,400,000	48,000	3,000,000	30,000
Hake.....do.....	100,000	1,000	90,000	900	85,000	850
Horse-mackerel.....do.....	75,000	6,000	40,000	3,600	15,000	1,200
Kingfish.....do.....	40,000	2,400	25,000	2,450	40,000	2,000
Mackerel.....do.....	20,000	2,000	15,000	2,100	10,000	1,500
Pike.....do.....	25,000	1,500	22,000	1,320	20,000	1,200
Perch, fresh-water.....do.....	150,000	15,000	100,000	7,000	40,000	3,200
Perch, salt-water.....do.....	250,000	30,000	200,000	10,000	300,000	8,000
Rockfish.....do.....	1,797,482	143,798	1,024,619	71,723	1,421,480	71,074
Salmon.....do.....	2,125,000	136,500	2,065,000	120,750	2,919,843	143,081
Sardines.....do.....	500,000	10,000	200,000	6,000	103,130	4,125
Sea bass.....do.....	275,000	18,250	325,000	18,250	100,000	7,000
Striped bass.....do.....	5,000	1,000	25,000	3,750	50,000	6,250
Shad.....do.....	200,000	12,000	600,000	18,000	500,000	12,500
Skates.....do.....	50,000	2,500	30,000	1,200	40,000	800
Smelt.....do.....	900,000	90,000	1,000,000	70,000	700,000	43,000
Sturgeon.....do.....	587,025	38,261	715,795	38,799	765,297	34,438
Suckers.....do.....	175,000	8,250	100,000	4,000	140,000	4,200
Tomcod.....do.....	5,000	500	15,000	1,200	25,000	1,500
Trout.....do.....	25,000	8,000	30,000	4,000	18,000	3,000
Miscellaneous.....do.....	31,100	4,230	35,100	5,905	53,000	9,102
Total.....	11,440,221	692,605	11,153,552	502,640	12,533,117	490,210
Mollusks, crustaceans, etc.:						
Oysters.....bushels.....	151,225	592,137	158,130	618,455	178,645	698,287
Clams, hard.....sacks.....	1,000	3,000	1,100	3,300	1,200	3,600
Clams, soft.....boxes.....	25,000	25,000	30,000	30,000	40,000	40,000
Mussels.....buckets.....	45,000	22,500	50,000	25,000	48,000	24,000
Spiny lobsters.....pounds.....	25,000	1,500	30,000	1,200	18,000	1,080
Crabs.....dozens.....	80,000	80,000	90,000	90,000	110,000	90,000
Shrimps.....pounds.....	200,000	12,000	500,000	25,000	775,000	38,750
Prawns.....do.....	15,000	3,750	10,000	2,500	5,000	1,250
Squid and octopus.....do.....	10,000	500	5,000	450	10,000	500
Terrapin.....dozen.....	1,400	5,600	1,500	6,000	1,400	7,000
Abalones.....do.....	1,400	1,050	1,200	900	1,500	1,125
Turtles.....pounds.....	30,000	1,500	25,000	1,250	18,000	900
Frogs.....dozen.....	8,000	21,000	6,000	21,000	8,000	28,000
Total.....		708,537		625,005		943,492
Grand total.....		1,402,222		1,127,645		1,431,702

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EXPORT TRADE OF SAN FRANCISCO.

San Francisco maintains a large export trade in fishery products. Canned salmon constitutes the great bulk of the shipments, but cured codfish, salt salmon, oysters, shrimp, and other products are of considerable importance. The following table, based on the custom-house records, shows in detail the extent of the exportations in the years 1890, 1891, and 1892. The items for which it is possible to present separate figures are cured codfish, other cured fish, canned salmon, pickled salmon, other canned fish, oysters, and other shellfish. The "other cured fish" consist chiefly of dried squid, shipped by the Chinese to Hongkong and the Sandwich Islands. The "other shellfish" are chiefly dried shrimp, with a few dried abalone, shipped by the Chinese to Hongkong, the Sandwich Islands, and other ports.

Table showing exports of fishery products from San Francisco in 1890, 1891, and 1892.

Destination.	Codfish, cured.		Other cured fish.	
	Pounds.	Value.	Pounds.	Value.
1890.				
Australia.....	473, 270	\$33, 635		
British Columbia.....	17, 080	1, 200	2, 100	\$134
China.....	13, 940	972		
Costa Rica.....	16, 010	1, 226		
East India.....	1, 900	119		
Guatemala.....	15, 640	1, 112		
Hongkong.....	48, 780	3, 080	304, 850	18, 361
Japan.....	3, 490	229		
Mexico.....	8, 605	576		
Nicaragua.....	800	56		
San Salvador.....	5, 690	385		
Sandwich Islands.....	278, 608	16, 587	404, 650	24, 218
Other places.....	11, 480	809		
Total.....	892, 318	56, 020	711, 000	42, 733
1891.				
Australia.....	248, 320	15, 155		
British Columbia.....	7, 900	570		
China.....	12, 750	878		
United States of Colombia.....	900	63		
Chile.....	800	61		
Costa Rica.....	28, 580	2, 100		
East India.....	4, 500	294		
Guatemala.....	20, 000	1, 546		
Hongkong.....	33, 410	2, 201	429, 900	26, 745
Japan.....	7, 420	515		
Mexico.....	6, 840	457		
Nicaragua.....	900	65		
Oceanica.....	4, 020	243		
San Salvador.....	5, 620	385		
Sandwich Islands.....	207, 220	13, 767	324, 900	19, 946
Other places.....	4, 640	306		
Total.....	654, 730	33, 070	754, 800	45, 691
1892.				
Australia.....	90, 720	5, 136	40, 300	2, 416
British Columbia.....	9, 170	641		
China.....	17, 580	1, 148		
Costa Rica.....	21, 810	1, 469		
Guatemala.....	24, 000	1, 681		
Hongkong.....	19, 040	1, 077	294, 100	17, 470
Japan.....	1, 810	96		
Mexico.....	7, 185	435		
Nicaragua.....	1, 100	73		
Oceanica.....	9, 090	539		
San Salvador.....	9, 050	576		
Sandwich Islands.....	270, 500	13, 042	391, 500	16, 900
Other places.....	900	62		
Total.....	483, 295	26, 873	625, 900	36, 846

Exports of fishery products from San Francisco in 1890, 1891, and 1892—Continued.

Destination.	Canned salmon.		Value of pickled salmon.	Value of canned fish other than salmon.	Value of oysters.	Value of other shellfish.	Total value.
	Pounds.	Value.					
1890.							
Australia	2,090,338	\$217,951	\$30,167	\$4,222	\$45	\$1,077	\$278,707
British Columbia	6,840	720	722	748	10,023	1,468	15,685
China	5,010	583		119		78	1,719
U. S. of Colombia				14		268	282
Chile	60,096	5,238		46		7,350	12,643
Costa Rica	29,490	2,187		427	788	74	5,702
England	13,409,488	1,211,458				174	1,211,488
East India	39,230	4,143	30				4,456
Ecuador	119,400	2,944					2,944
France	144,070	16,008					16,008
Germany	9,800	1,100					1,100
Guatemala	4,880	541		684	327	84	2,748
Hongkong	204,040	21,419		567	191	212,885	227,583
Japan	12,080	1,856	195	546	56	117	2,450
Mexico	34,030	2,588	68	978	1,447	512	6,185
Nicaragua	3,055	364		190	370	23	1,018
Peru	1,440	150		149	149	60	310
San Salvador	1,500	164		7,690	10,583	32,022	153,090
Sandwich Islands	228,250	24,682	27,256	1,497	445	406	141,915
Other places	99,705	9,548	2,322				
Total	16,497,190	1,523,909	66,851	17,856	24,434	286,908	1,687,712
1891.							
Australia	1,368,050	181,968	40,323	1,533	283	2,223	191,804
British Columbia	7,200	750		1,354	8,051	2,024	13,349
China	6,520	672		133		261	1,066
U. S. of Colombia	1,850	194		184	482	639	1,562
Chile	19,400	2,025		175		8,140	10,410
Costa Rica	82,906	8,520		138	364		11,182
England	13,601,193	1,221,142		75			1,221,217
East India	12,840	1,298		86		515	2,192
Guatemala	5,046	537		361	897	501	2,843
Hongkong	80,100	8,747	37	680	24	192,173	230,598
Japan	7,680	804		193		1,735	2,337
Mexico	32,290	3,433		1,062	1,902	436	6,880
Nicaragua	2,980	255		160	188	106	774
Oceanica	37,918	3,989	739	502	60	60	5,008
San Salvador	2,980	808		80	466	302	1,529
Sandwich Islands	184,820	20,353	37,651	8,443	0,630	32,379	141,090
Other places	35,430	3,728	1,995	894	345	248	7,511
Total	15,508,115	1,468,613	80,745	16,024	22,760	241,647	1,684,080
1892.							
Australia	1,507,240	160,773	11,470	275	15	829	160,914
British Columbia	4,580	478		537	1,034	1,910	5,190
China	6,956	785		95	15	288	2,391
U. S. of Colombia						280	380
Chile	61,100	5,947				4,005	10,652
Costa Rica	4,700	489				18	1,916
England	17,377,838	1,701,715					1,701,715
East India	18,790	1,943		22	90	541	2,068
Ecuador	2,400	250		225			475
Germany	2,400	225					225
Guatemala	13,700	1,409		938	944	56	4,277
Hongkong	65,700	6,674		509	31	106,504	231,365
Japan	4,510	470		241			809
Mexico	23,080	2,499		1,811	1,000	172	6,307
Nicaragua	700	74		37		187	341
Oceanica	62,465	6,297	1,054	841	128	301	9,190
Peru	12,000	1,000		285			1,000
San Salvador	9,840	1,079		285	820	154	2,422
Sandwich Islands	154,180	15,858	33,670	5,191	5,109	19,357	108,085
Other places	37,220	2,634	182	48		40	2,972
Total	19,480,335	1,910,537	46,976	10,250	9,413	224,013	2,263,008

TEHAMA COUNTY.

This county is near the head waters of the Sacramento River, which flows through it. Late in the fall some attention is given to taking salmon; gill nets and haul seines are used, and the catch is shipped fresh to San Francisco. The fish taken are usually of a poor quality

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and bring but a small price. They are probably the fish that, having escaped the many nets of the lower river, finally reached the spawning-grounds and later fell into the nets of the fishermen of the upper river. The amount and value of the catch of late years have been as follows:

Years.	Pounds.	Value.
1889.....	118, 148	\$2, 956
1890.....	125, 800	3, 147
1891.....	115, 029	2, 890
1892.....	178, 389	3, 310

HUMBOLDT COUNTY.

Of the four years covered by this report the fisheries of Humboldt County were most important in 1889, in the matter of products and capital invested, owing to the fact that in that year a salmon cannery was operated which was idle during the three following years. This is one of the most important fishing counties in California. Over 300 fishermen are regularly employed during the fishing season and the value of the catch is from \$45,000 to \$80,000 annually. The most prominent product is the salmon. The catch of salt-water fish and of clams and crabs is also important. The principal fishing center is Eureka, situated near Eel River, in which most of the salmon are taken. The salt-water fish are obtained at the mouth of the river, off Trinidad, located a few miles to the north, and in Humboldt Bay. The local demand for fish in Eureka and vicinity takes a large part of the catch, the surplus fish being sent to San Francisco by steamer. The yield of salmon during the four years named was over 1,000,000 pounds annually, and that of other fish aggregated several hundred thousand pounds. About 1,000 bushels of clams and 2,400 to 3,000 dozen of crabs were taken and sold each year. The number of cases of canned salmon prepared at the cannery during 1889 was 11,652.

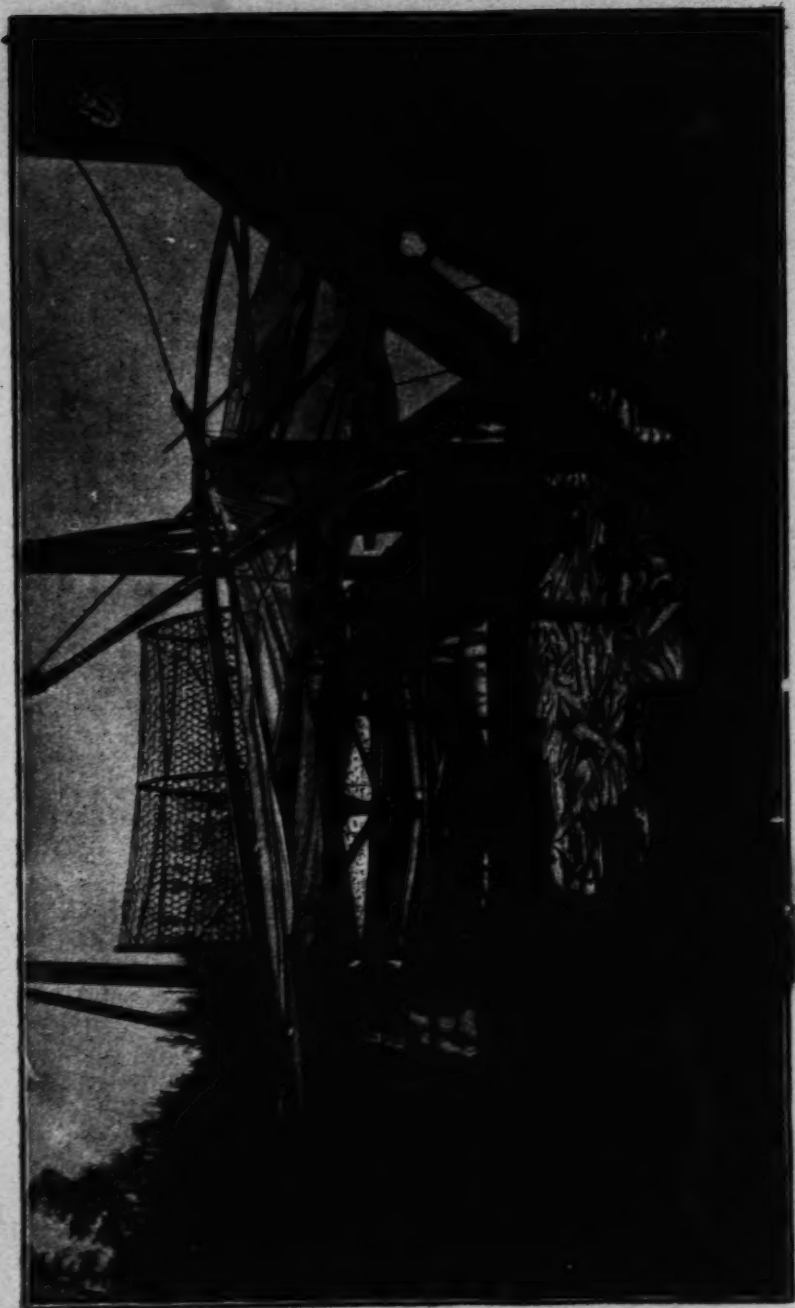
DEL NORTE COUNTY.

Up to the present time the fisheries of this county have been limited to the taking of salmon at and near the mouths of Smith and Klamath rivers. A small salmon cannery on each river consumes the bulk of the catch, a part of which is also used for local consumption, and a part salted and shipped to San Francisco.

Nearly all the persons employed in the fishing industry of these two rivers are Indians, native to the section, there being a strong objection to the employment of Chinese laborers in this county.

The following is a statement of the quantities of salmon packed in this county in the years 1889 to 1892, inclusive. The fish utilized in canning consist of chinooks and silversides in about equal proportions.

Year.	Klamath River.	Smith River.	Total.
	Cases.	Cases.	Cases.
1889.....	3, 000	2, 000	5, 000
1890.....	3, 000	2, 500	7, 500
1891.....	4, 500	.....	4, 500
1892.....	1, 300	3, 000	4, 300



SCOW FISH WHEEL, COLUMBIA RIVER.

OREGON.

GENERAL EXTENT AND FEATURES OF THE FISHERIES.

From the first settlement of the State the fisheries of Oregon have yearly been of increasing interest. The abundance of salmon first attracted the fishermen, and their capture has continued the leading branch of the business. While natural causes, often unaccountable, largely govern the migrations of fish and are chiefly responsible for the uncertain character of their movements and the fluctuations in the catch, there is no room for doubt that the preservation of the supply in the rivers is largely dependent on man. During recent years a large increase is annually shown in the various appliances of capture in the salmon fisheries of the Columbia River, which yields the bulk of the salmon caught in the State. From an increase in fishing appliances a gain in the catch might be expected, but such is generally not the case. In the years of largest production a much less amount of fishing gear was used than at present. As the fish were depleted, the fishermen, eager to keep up the amount of their catch, increased the number of their gill nets, pound nets, wheels, etc., often only to find a yet smaller catch, which would again be followed by more fishing appliances.

Artificial propagation, which has been carried on so far as means would permit, has in a measure made good the losses from increased fishing gear. The naturally favorable conditions of the Columbia and most of the other rivers of the State for abundance of desirable food-fish continue nearly, if not quite, as favorable as in the early days of the fisheries, when the only fish caught were those taken by the native Indians for their own use. The waters remain unpolluted by the sewage of large cities and the refuse of manufactories, and from the topography of the country through which the rivers flow they may be expected to remain unimpaired for many years.

The salmon fishery and the dependent canning business are vastly more important than all other branches of the fisheries of this State, the only other fishery of any prominence being that for sturgeon. Only very limited quantities of other food-fish are taken, and the general fisheries are much less developed than in California or Washington. Oysters and fur seals contribute to the income of the fishermen.

The following tables show the extent of the fisheries of this State. In the last year covered by the statistics, 4,332 persons were engaged in the industry, \$2,272,351 was invested, and 28,521,105 pounds of products were taken, having a value of \$872,405.

Persons employed in the fisheries of Oregon.

How engaged.	1880.	1890.	1901.	1902.
On vessels fishing.....	11	25	55	80
On vessels transporting.....	40	40	38	57
In shore fisheries.....	2,234	2,112	2,482	2,706
On shore, in canneries, etc.....	1,234	1,282	1,342	1,710
Total.....	3,519	3,459	3,917	4,553

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Vessels, boats, apparatus, shore property, and cash capital used in fisheries of Oregon.

Items.	1890.		1890.		1891.		1892.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.
Vessels fishing.....	1	\$12,000	1	\$10,000	3	\$15,000	4	\$17,000
Tonnage.....	71.17		162.97		231.90		267.03	
Outfit.....		4,000		3,150		7,450		8,250
Vessels transporting..	10	42,900	10	43,900	10	53,740	20	70,100
Tonnage.....	442.84		442.94		458.31		555.20	
Outfit.....		8,530		8,530		8,010		11,945
Boats.....	1,184	125,000	1,119	125,040	1,253	142,540	1,404	154,425
Apparatus:								
Gill nets.....	1,404	181,005	1,234	178,330	1,302	201,025	1,506	212,200
Pound nets.....	101	74,700	100	70,500	143	100,500	247	175,400
Seine.....	23	7,425	18	4,825	33	14,350	32	12,000
Wheels.....	31	120,000	30	107,500	30	108,152	40	123,552
Dip nets.....	95	475	95	425	80	300	50	250
Lines.....		4,487		8,530		7,440		16,250
Tugs and boes.....		145		150		153		10
Other apparatus.....				850		2,050		2,000
Shore property.....		648,245		594,445		592,950		600,150
Cash capital.....		625,900		707,000		640,000		600,000
Total.....		1,868,290		1,900,217		1,865,311		2,272,351

Products of the fisheries of Oregon.

Species.	1889.		1890.		1891.		1892.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Black cod.....	25,000	\$1,750			1,000	\$0		
Hinchock salmon.....	1,147,000	34,941	2,562,943	877,961	871,392	24,127	2,160,397	625,370
Chinook salmon, fresh.....	12,478,097	538,120	18,090,361	825,484	17,106,906	645,710	15,877,283	579,007
Chinook salmon, salted.....	70,900	2,190	87,100	2,330	97,450	2,900	54,700	1,407
Cultus cod.....	101,112	2,665	27,120	1,350	28,415	1,300	20,304	1,315
Flounders.....							10,000	400
Halibut.....	487,250	11,125	10,450	1,045	48,500	2,900	18,370	1,787
Rockfish.....	84,010	4,200	82,200	4,113	86,220	4,181	98,115	4,265
Shad.....	20,900	2,900	30,100	4,000	70,500	4,220	100,000	3,270
Silver salmon, fresh.....	4,125,540	91,605	2,108,390	33,873	1,178,030	18,640	3,325,451	64,180
Silver salmon, salted.....	250,100	11,045	313,100	5,324	298,500	5,023	252,100	4,484
Steelhead salmon.....	844,000	18,907	1,002,980	20,873	1,122,340	18,964	2,508,771	48,553
Sturgeon.....	741,730	8,821	1,441,444	10,279	1,456,619	17,311	2,513,690	28,001
Crabs.....	6,000	200	4,800	160	3,521	141	4,125	496
Crawfish.....	30,000	2,000	25,000	2,750	30,000	4,000	20,000	3,000
Oysters.....	150,000	2,125	122,300	2,750	146,040	2,043	147,000	2,000
Clams.....	46,730	612	46,500	775	45,000	780	48,500	625
Fur seals.....						26,400		42,200
Sea otter.....				15,000				1,720
Total.....	20,719,297	721,967	36,307,200	754,308	32,444,105	777,247	28,321,105	872,405

In the following supplementary table the quantities of certain products are designated by the unit by which they are usually sold:

Products.	1890.	1890.	1891.	1892.
Crabs.....	number.....	2,200	1,400	1,175
Oysters.....		1,000	1,470	1,023
Clams.....		004	004	001
Fur seals.....			1,350	1,730
Sea otter.....				13

BEAM-TRAWL FISHING.

Several attempts have been made on the Atlantic coast to introduce the beam trawl, a form of apparatus that is so largely and successfully used by the fishermen of England; but on account of the rough, rocky bottom on which most of the trials were made, the results have been unfavorable and its further use has been discontinued. An account

of a similar experiment on the Pacific coast has been furnished by Captain Exon, now a pilot on the Columbia River, whose father was lost while engaged in beam-trawling. During 1884 Capt. John Exon, of East Portland, Oreg., was in the employ of a fishing firm known as the Portland Deep-Sea Fishing Company, with headquarters at Portland. Captain Exon at the time was master of the schooner *Carrie B. Lake*, of about 36 tons burden, engaged in line fishing just outside the mouth of the Columbia River. The numerous varieties of bottom fish were very abundant, and the ground fished over had an even and smooth sandy bottom. Captain Exon had formerly been engaged in the beam-trawl fishery from Grimsby, England, and sent there for two beam-trawls, which were brought out by his brother in 1884 and at once put to use.

The trawls were operated near the mouth of the Columbia and off Grays Harbor with equally good success, the catch comprising large hauls of sole, flounders, orange and red rockfish, and many other varieties of bottom fish. This fishery was successfully carried on during 1885. Unfortunately for the enterprising promoter of this fishery and his well-laid plans, on January 3, 1886, while on a fishing trip, the vessel and its master, mate, and cook were lost. The firm soon after gave up the fishing business, and no later attempts at beam-trawl fishing on the Pacific coast have been reported. With the growth of the fish business of the Pacific States, some enterprising firms may yet take advantage of the experiments of the pioneer in this mode of fishing, the success of which he demonstrated. The United States Fish Commission steamer *Albatross* has also made frequent use of the beam-trawl in extensive investigations along the Pacific coast.

DETAILED STATISTICAL DATA.

The following tables, relating to each of the years 1889 to 1892, inclusive, show the extent of the fishing industry in each county of Oregon. The scope of the tables is such that but little explanation is necessary, and they are to be consulted in conjunction with the descriptive notes on each county which follow.

Table showing by counties the number of persons employed in the fisheries of Oregon in 1889, 1890, 1891, and 1892.

Counties.	1889.					1890.				
	On vessels fishing.	On vessels transporting.	In shore fisheries.	On shore, in canneries, etc.	Total.	On vessels fishing.	On vessels transporting.	In shore fisheries.	On shore, in canneries, etc.	Total.
Benton			112	34	146			48		48
Clackamas			36		36			38		38
Clatsop		13	1,361	668	2,062		13	1,472	768	2,253
Columbia			35	4	39			40	4	44
Coos			131	85	216			68	5	73
Curry		27	74	105	206		27	70	78	175
Douglas			78	49	127			4		4
Lane			82	50	132			48	72	120
Multnomah	11		142	140	293	25		139	267	391
Tillamook			50	34	84			50	59	109
Wasco			120	94	214			115	128	243
Total	11	40	2,254	1,264	3,609	25	40	2,112	1,262	3,420

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Table showing by counties the number of persons employed in the fisheries of Oregon in 1888, 1890, 1891, and 1892—Continued.

Counties.	1891.					1892.				
	On vessels fishing.	On vessels transporting.	In shore fisheries.	On shore, in canneries, etc.	Total.	On vessels fishing.	On vessels transporting.	In shore fisheries.	On shore, in canneries, etc.	Total.
Benton			85	22	107			83	22	105
Clackamas			40		40			40		40
Clatsop	32	11	1,764	841	2,648	35	21	1,821	792	2,669
Columbia			43	6	49			40	12	52
Coon			86	57	133			143	35	178
Curry		27	63	73	163		27	78	69	166
Douglas			4		4			56	51	107
Lane			42	36	78			103	91	194
Multnomah	23		133	176	332	25	9	187	203	415
Tillamook			50	45	95			63	63	125
Wasco			120	107	227			124	120	243
Total	55	38	2,452	1,342	3,887	60	57	2,705	1,510	4,215

Table showing by counties the nativity of persons employed in the fisheries of Oregon in 1892.

Counties.	Countries.											
	United States.	Sweden.	Norway.	Russia.	Great Britain.	Italy.	Austria.	Greece.	Germany.	France.	China.	Danmark.
On vessels fishing:												
Clatsop	11	6	6		8							
Multnomah	12	2	1		9							
Total	23	8	7		17							
On vessels transporting:												
Clatsop	21											
Curry	27											
Multnomah	9											
Total	57											
In shore or boat fisheries:												
Benton	50	12	10	3								
Clackamas	40											
Clatsop	207	230	180	664	89	68	184	45	15			
Columbia	40											
Coon	53	30	25	30					4	4		
Curry	35	1	1	1								
Douglas	32	5			2	1	1		1			
Lane	32	20	20	15								
Multnomah	70	34	18	33								
Tillamook	38	7					19					
Wasco	30	6						2				
Total	654	445	261	765	91	69	204	48	27	4	9	117
On shore, in canneries, etc.:												
Benton	4										18	
Clatsop	143	30	7	20	6				2		592	2
Columbia	12											
Coon	16										25	
Curry	37										43	
Douglas	9										36	
Lane	24										43	
Multnomah	46										53	
Tillamook	6				4						100	
Wasco	17										87	
Total	299	26	9	36	10				2		1,100	2

Table showing by counties the nationality of persons employed in the fisheries of Oregon in 1892.

Counties.	Countries.												
	United States.	Sweden.	Norway.	Russia.	Great Britian.	Italy.	Austria.	Greece.	Germany.	France.	China.	Denmark.	United States Indians.
On vessels fishing:													
Clatsop	22	2	4		2								
Multnomah	17	1	1										1
Total	39	3	5		2								1
On vessels transporting:													
Clatsop	21												
Curry	27												
Multnomah	9												
Total	57												
In shore or boat fisheries:													
Benton	75	4	4										
Clackamas	40												
Clatsop	1,821	28	23	90	11	4	35						
Columbia	40												
Cook	108	9	11	11									
Curry	42												
Douglas	51												
Lane	15	5	4	3									
Multnomah	157												
Tillamook	42												
Wasco	37	2							1			3	23
Total	2,329	48	43	113	11	4	35		1	3		3	117
On shore, in canneries, etc.:													
Benton	4												
Clatsop	178	8	3	10							18	392	2
Columbia	12												
Cook	10										25		
Curry	27										43		
Douglas	9										33		
Lane	24										53	14	
Multnomah	38	2		3							106		
Tillamook	6										57		
Wasco	17										95	17	
Total	340	10	3	13							1,106	3	31

Table showing by counties the vessels, boats, apparatus, and property employed in the fisheries of Oregon in 1889, 1890, 1891, and 1892.

Years and counties.	Vessels fishing.				Vessels transporting.				Boats.	
	No.	Tonnage.	Value.	Value of outfit.	No.	Tonnage.	Value.	Value of outfit.	No.	Value.
1889.										
Benton									67	\$1,719
Clackamas									29	700
Clatsop					5	65.23	\$12,900	\$5,000	762	97,675
Columbia									35	2,405
Cook									79	2,935
Curry					5	554.71	20,000	6,440	41	3,250
Douglas									26	2,275
Lane									36	450
Multnomah									125	9,575
Tillamook	1	71.17	\$18,000	\$4,000					25	2,500
Total	1	71.17	18,000	4,000	10	443.94	42,900	9,530	1,164	125,000

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Table showing by counties the vessels, boats, apparatus, and property employed in the fisheries of Oregon in 1889, 1890, 1891, and 1892—Continued.

Years and counties.	Vessels fishing.				Vessels transporting.				Boats.	
	No.	Tonnage.	Value.	Value of outfit.	No.	Tonnage.	Value.	Value of outfit.	No.	Value.
1890.										
Benton									30	\$630
Clackamas									29	710
Clatsop					5	95.25	\$12,900	\$3,975	739	107,925
Columbia									32	2,800
Cook									61	1,475
Curry					5	358.71	30,000	4,435	41	3,350
Douglas									3	150
Lane									24	600
Multnomah	1	148.97	\$18,000	\$3,150					140	10,000
Tillamook									25	2,500
Total	1	148.97	10,000	3,150	10	442.94	42,900	8,530	1,113	135,040
1891.										
Benton									45	1,150
Clackamas									30	730
Clatsop	2	82.93	5,000	3,450	5	96.00	24,305	2,000	852	119,325
Columbia									90	3,000
Cook									38	1,475
Curry					5	358.71	20,375	4,130	43	3,550
Douglas									3	150
Lane									21	525
Multnomah	1	148.97	10,000	4,000					132	9,065
Tillamook									26	2,575
Wasco									2	40
Total	3	231.90	15,000	7,450	10	454.31	53,740	9,010	1,252	142,585
1892.										
Benton									50	1,350
Clackamas									30	750
Clatsop	3	96.00	7,300	4,350	12	154.06	30,900	3,725	908	127,975
Columbia									90	3,050
Cook									90	3,325
Curry					5	358.71	20,200	5,820	40	3,475
Douglas									29	2,100
Lane									58	1,900
Multnomah	1	148.97	10,000	4,000	3	42.43	13,000	2,400	157	10,450
Tillamook									7	150
Wasco										
Total	4	247.43	17,300	8,350	20	555.20	73,100	11,945	1,494	154,425

Years and counties.	Apparatus of capture.									
	Gill nets.		Pound nets.		Seines.		Wheels.		Dip nets.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.
1889.										
Benton	55	\$3,300								
Clackamas	117	2,800								\$120
Clatsop	508	144,925	90	\$78,900	8	\$4,875				
Columbia	41	3,500								\$1,750
Cook	140	4,700			5	750				87
Curry	102	2,500			10	1,000				25
Douglas	45	6,100	3	800						
Lane	26	1,500								
Multnomah	194	5,450					15	\$44,525		
Tillamook	50	3,750								2,000
Wasco							10	75,500	95	\$475
Total	1,404	181,065	101	74,700	23	7,425	31	120,025	95	479
1890.										
Benton	19	1,000								
Clackamas	118	2,945								125
Clatsop	601	152,925	106	78,500	7	2,775				
Columbia	43	5,620								2,340
Cook	54	2,000			1	250				90
Curry	100	2,900			10	1,000				
Douglas	3	150								
Lane	24	1,400								
Multnomah	154	4,000					13	37,025		4,500
Tillamook	50	3,750								
Wasco							10	70,500	65	425
Total	1,384	178,200	106	78,500	18	4,025	23	107,545	65	425

PACIFIC COAST FISHERIES.

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Table showing by counties the vessels, boats, apparatus, and property employed in the fisheries of Oregon in 1889, 1890, 1891, and 1892—Continued.

Years and counties.	Apparatus of capture.										Value of lines.	Value of trawls and booms.	Value of guns, etc.
	Gill nets.		Pound nets.		Seines.		Wheels.		Dip nets.				
	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.			
1891.													
Benton	40	\$2,400			1	\$500						\$120	
Clackamas	118	2,350											\$1,000
Clatsop	697	175,100	142	\$100,500	18	18,750							
Columbia	45	5,650									\$2,300		
Cook	70	2,470			2	500					00	25	
Curry	164	2,480			0	2,100							300
Douglas	2	150											
Lane	21	1,300											
Multnomah	125	4,415					12	\$31,032			4,550		850
Tillamook	50	3,700			1	300							
Wasco					1	400	18	77,100	60	\$300			
Total	1,302	201,625	142	100,500	22	14,350	30	108,132	60	300	7,440	125	2,050
1892.													
Benton	37	2,220			1	300						124	
Clackamas	120	3,000											
Clatsop	677	181,800	245	172,400	18	7,550							1,000
Columbia	45	5,650									4,500		
Cook	107	4,000			8	2,000					100	25	
Curry	160	3,400			8	1,500							300
Douglas	28	2,710											
Lane	58	3,480			1	150							
Multnomah	164	5,000					19	40,732			5,740		850
Wasco			2	1,000	3	1,100	21	92,100	50	250			
Total	1,306	312,200	247	173,400	22	12,000	40	132,932	50	250	10,520	149	2,050
Years and counties.	Value of shore and accessory property.			Total value of investment.	Years and counties.	Value of shore and accessory property.			Total value of investment.				
	Cash capital.					Cash capital.							
1889.													
Benton	\$14,000	\$25,000	\$44,130		Benton	\$14,000	\$11,000	\$22,978					
Clackamas	290		3,920		Clackamas	300		4,000					
Clatsop	428,900	358,000	1,124,285		Clatsop	393,700	480,000	1,368,070					
Columbia	2,500	3,000	15,485		Columbia	2,500	6,000	10,950					
Cook	10,000	40,000	65,487		Cook	10,700	10,000	20,400					
Curry	32,300	55,000	133,350		Curry	31,100	52,000	127,000					
Douglas	15,000	30,000	55,285		Douglas								
Lane	11,000	29,000	45,210		Lane	12,000	7,000	21,785					
Multnomah	83,755	31,000	147,983		Multnomah	61,000	55,000	180,732					
Tillamook	21,000	20,000	69,850		Tillamook	21,000	10,000	37,025					
Wasco	50,500	28,000	154,475		Wasco	35,050	20,000	132,480					
Total	648,245	620,000	1,850,290		Total	582,350	640,000	1,825,311					
1890.													
Benton	4,000		5,325		Benton	14,000	10,000	27,984					
Clackamas	290		3,945		Clackamas	300		4,000					
Clatsop	402,300	400,000	1,183,200		Clatsop	412,600	449,000	1,360,000					
Columbia	2,500	4,000	17,180		Columbia	2,500	14,000	30,780					
Cook	1,000	4,000	9,490		Cook	11,100	20,000	30,000					
Curry	31,300	52,000	128,365		Curry	30,000	35,000	108,905					
Douglas			300		Douglas	18,000	20,000	40,810					
Lane	13,000	10,000	25,040		Lane	24,000	25,000	49,500					
Multnomah	60,955	140,000	270,307		Multnomah	68,100	170,000	350,392					
Tillamook	21,000	27,000	64,230		Tillamook	40,050	50,000	205,250					
Wasco	60,500	70,000	201,425		Wasco								
Total	596,445	707,000	1,609,217		Total	680,150	803,000	2,272,361					

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Table showing by counties and species the yield of the fisheries of Oregon in 1889, 1890, 1891, and 1892.

Counties and species.	1889.		1890.		1891.		1892.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Benton:								
Chinook salmon.....	428,428	\$5,908	71,100	\$1,343	260,359	\$3,117	284,280	\$3,386
Silver salmon.....	444,700	7,280	85,400	1,060	125,363	2,018	89,710	1,584
Crabs.....	8,628	286	4,200	108	5,521	141	4,125	495
Oysters.....	150,000	3,125	122,300	2,758	140,040	3,043	147,000	3,062
Total.....	1,029,705	16,627	283,120	5,937	545,908	8,919	524,125	8,527
Clackamas:								
Blackback salmon.....	15,220	600	22,340	804	31,140	846	27,225	1,080
Chinook salmon.....	90,114	3,905	124,114	4,984	98,750	3,550	114,113	4,504
Steelhead salmon.....	20,670	413	30,200	604	18,112	282	24,214	630
Total.....	126,004	4,927	176,660	6,492	128,002	4,758	165,551	6,213
Clatsop:								
Black cod.....					1,000	8		
Blackback salmon.....	165,015	3,775	262,715	5,275	129,940	3,191	628,495	15,380
Chinook salmon.....	9,121,965	449,549	12,047,880	405,528	14,216,880	569,354	12,107,750	484,318
Culms cod.....					800	8		
Flounders.....							10,000	400
Halibut.....					28,000	1,400	2,000	100
Rockfish.....							5,000	200
Shad.....	29,900	2,900	50,100	4,008	70,500	4,230	100,000	3,270
Silver salmon.....	407,900	8,919	441,800	5,470	132,590	1,225		
Steelhead salmon.....	654,740	13,513	705,550	7,064	680,380	7,392	1,316,120	13,975
Fur-seal pelts.....						8,490		
Total.....	10,389,670	479,454	12,570,125	427,964	15,275,980	891,388	14,170,385	587,029
Columbia:								
Blackback salmon.....	17,000	510	25,000	750	15,000	550	20,000	700
Chinook salmon.....	119,000	4,840	187,000	7,400	115,000	4,800	150,000	6,000
Steelhead salmon.....	21,000	528	28,000	1,140	22,000	580	20,000	750
Sturgeon.....	314,730	3,286	324,620	3,308	471,967	5,170	900,795	10,280
Total.....	468,730	9,073	606,620	13,308	623,967	10,880	1,160,795	17,730
Cook:								
Chinook salmon, fresh.....	128,841	3,298	17,500	188	29,110	920	62,500	830
Chinook salmon, salted.....	47,505	1,250	48,000	454	38,250	412	23,500	817
Culms cod.....	38,112	1,305	27,120	1,356	27,615	1,361	24,304	1,315
Halibut.....	17,250	1,725	16,450	1,645	15,930	1,593	16,870	1,687
Rockfish.....	84,010	4,200	82,280	4,112	83,220	4,161	81,115	4,055
Silver salmon, fresh.....	987,900	25,061	126,000	1,800	208,770	2,056	262,500	2,057
Silver salmon, salted.....	332,500	9,864	280,000	4,200	252,750	3,806	227,500	3,500
Clams.....	48,720	812	46,500	775	45,000	760	49,500	825
Total.....	1,961,942	47,613	685,530	14,621	685,245	15,480	748,780	16,772
Curry:								
Chinook salmon, fresh.....	942,302	20,974	1,100,252	82,353	1,162,812	34,870	985,897	10,911
Chinook salmon, salted.....	23,400	848	47,100	1,884	61,200	2,443	22,200	890
Silver salmon, fresh.....	554,258	10,985	238,800	4,622	125,067	2,792	220,353	3,674
Silver salmon, salted.....	28,000	1,064	20,100	1,224	45,800	1,822	34,000	964
Sea-otter pelts.....								1,720
Total.....	1,548,740	33,680	1,419,280	46,223	1,464,400	41,862	983,050	27,380
Douglas:								
Chinook salmon.....	271,245	5,426	7,000	350	8,000	400	105,000	1,312
Silver salmon.....	598,855	10,723	12,000	650	14,000	700	754,000	11,314
Total.....	869,000	16,150	20,000	1,000	22,000	1,100	859,000	12,626
Lane:								
Chinook salmon.....	168,420	3,308	114,000	902	110,000	825	141,100	1,702
Silver salmon.....	842,210	21,064	201,621	4,375	222,270	3,350	1,196,300	17,704
Total.....	1,010,630	24,372	406,620	5,277	332,270	4,175	1,337,400	19,507
Multnomah:								
Black cod.....	25,000	1,250						
Blackback salmon.....	330,240	12,549	1,048,978	45,897	297,410	5,497	1,224,495	28,080
Chinook salmon.....	357,789	10,612	1,495,230	66,961	491,064	16,728	824,549	28,465
Culms cod.....	78,000	3,250						
Halibut.....	470,000	9,400						
Steelhead salmon.....	90,000	2,150	528,628	7,479	128,200	3,482	627,000	11,980
Sturgeon.....	427,000	5,428	1,062,626	12,262	864,622	12,141	1,562,000	17,721
Fur-seal pelts.....							19,000	24,678
Crowfish.....	20,000	2,000	25,000	2,750	30,000	4,800	20,000	2,000
Total.....	1,824,100	53,042	4,508,988	181,221	1,906,104	62,646	4,068,741	116,080

PACIFIC COAST FISHERIES.

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Table showing by counties and species the yield of the fisheries of Oregon in 1889, 1890, 1891, and 1892—Continued.

Counties and species.	1889.		1890.		1891.		1892.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Tillamook:								
Chinook salmon.....	490,000	\$7,840	297,500	\$2,975	309,458	\$3,705	295,000	\$3,290
Silver salmon.....	285,115	5,702	585,800	11,662	215,500	2,277	1,448,540	15,742
Total.....	775,115	13,542	1,108,300	16,097	527,958	6,002	1,239,500	19,102
Wasco:								
Blueback salmon.....	590,615	17,518	1,538,910	45,205	449,702	11,043	1,292,272	32,542
Chinook salmon.....	322,833	9,453	1,145,587	32,490	877,644	10,241	832,065	25,064
Silver salmon.....	67,494	1,170	103,880	1,817	113,000	2,212	871,498	9,635
Steelhead salmon.....	48,590	1,227	641,410	12,635	256,040	5,100	779,344	21,837
Total.....	1,029,522	29,368	3,476,787	92,177	1,188,316	28,655	3,215,169	88,298
All counties:								
Black-cod.....	25,000	1,250			1,000	8		
Blueback salmon.....	1,147,090	34,961	3,543,945	97,861	871,892	24,127	5,148,597	85,579
Chinook salmon, fresh.....	12,478,087	536,120	18,594,801	535,484	17,189,988	643,710	15,577,235	579,637
Chinook salmon, salted.....	70,900	2,186	87,100	2,538	97,450	2,680	84,700	1,407
Cultus-cod.....	101,112	3,555	27,120	1,558	28,415	1,369	28,504	1,215
Fishers:								
Halibut.....	487,350	11,125	18,458	1,945	43,000	2,998	18,570	1,787
Rockfish.....	84,010	4,200	82,280	4,113	83,220	4,161	88,115	4,255
Shad.....	28,980	2,980	50,100	4,908	70,500	4,230	100,000	3,270
Silver salmon, fresh.....	4,125,540	91,563	3,189,390	33,573	1,175,000	18,640	3,825,451	64,180
Silver salmon, salted.....	350,100	11,048	313,300	8,524	280,550	5,628	232,100	4,484
Steelhead salmon.....	844,080	18,837	1,002,800	20,573	1,122,340	16,966	2,598,771	48,582
Sturgeon.....	741,790	6,821	1,441,448	16,279	1,454,619	17,311	2,515,490	28,001
Fur-seal pelts.....				15,000		20,480		42,298
Sea-otter pelts.....								1,729
Crawfish.....	20,000	3,000	25,000	3,750	80,000	4,800	28,000	3,000
Crabs.....	6,028	265	4,290	186	3,931	141	4,125	495
Clams.....	48,730	812	48,500	775	45,000	790	48,500	815
Oysters.....	150,000	3,125	123,000	2,766	144,040	3,048	147,000	3,082
Grand total.....	20,719,237	733,867	30,837,206	754,305	22,644,185	777,247	30,821,105	972,405

Table showing by counties, species, and apparatus of capture the yield of the fisheries of Oregon in 1889.

Counties and species.	Gill nets.		Pound nets and trap nets.		Seines.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Benton:								
Chinook salmon.....	428,428	\$5,088						
Silver salmon.....	444,706	7,269						
Crabs.....	6,028	265						
Total.....	879,162	12,562						
Clackamas:								
Blueback salmon.....	15,250	600						
Chinook salmon.....	80,114	3,605						
Steelhead salmon.....	20,670	413						
Total.....	116,034	4,618						
Clatsop:								
Blueback salmon.....	655	13	108,000	\$3,281	17,500	\$481		
Chinook salmon.....	6,215,900	305,811	2,187,175	108,984	618,000	36,743		
Shad.....			20,900	2,900	190	19		
Silver salmon.....	330,577	6,071			77,413	1,548		
Steelhead salmon.....	108,540	2,071	383,800	7,724	197,300	3,719		
Total.....	6,750,772	319,905	2,797,815	122,979	861,103	38,500		
Columbia:								
Blueback salmon.....	17,000	510						
Chinook salmon.....	114,000	4,640						
Steelhead salmon.....	21,000	528						
Sturgeon.....	78,000	848					258,043	\$2,547
Total.....	232,000	6,526					258,043	2,547

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Table showing by counties, species, and apparatus of capture the yield of the fisheries of Oregon in 1882—Continued.

Counties and species.	Gill nets.		Pound nets and trap nets.		Seines.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Coos:								
Chinook salmon, fresh.	103,394	\$2,353	.....	.....	25,447	\$633	.....	.....
Chinook salmon, salted.	47,500	1,250	.....	.....	.....	.....	26,112	\$1,805
Cultus-cod.	.....	.....	.....	.....	.....	.....	17,250	1,725
Halibut.	.....	.....	.....	.....	.....	.....	84,010	4,200
Rockfish.	.....	.....	.....	.....	.....	.....	.....	.....
Silver salmon, fresh.	929,773	19,734	.....	.....	177,236	5,917	.....	.....
Silver salmon, salted.	532,550	9,984	.....	.....	.....	.....	.....	.....
Total	1,286,197	32,821	.....	.....	212,683	6,250	127,872	7,220
Curry:								
Chinook salmon, fresh.	689,280	20,391	.....	.....	253,103	6,583	.....	.....
Chinook salmon, salted.	4,000	100	.....	.....	19,400	778	.....	.....
Silver salmon, fresh.	7,593	150	.....	.....	546,858	10,815	.....	.....
Silver salmon, salted.	9,000	260	.....	.....	17,900	704	.....	.....
Total	700,780	21,061	.....	.....	836,960	18,878	.....	.....
Douglas:								
Chinook salmon.	324,545	4,786	23,000	\$500	.....	.....	.....	.....
Silver salmon.	506,955	10,133	30,000	609	.....	.....	.....	.....
Total	745,000	14,909	53,000	1,209	.....	.....	.....	.....
Lane:								
Chinook salmon.	198,420	2,368	.....	.....	.....	.....	.....	.....
Silver salmon.	842,210	21,064	.....	.....	.....	.....	.....	.....
Total	1,010,630	24,432	.....	.....	.....	.....	.....	.....
Multnomah:								
Black-cod.	.....	.....	.....	.....	.....	.....	25,000	1,250
Blueback salmon.	144,905	5,136	.....	.....	.....	.....	.....	.....
Chinook salmon.	373,789	11,482	.....	.....	.....	.....	.....	.....
Cultus-cod.	.....	.....	.....	.....	.....	.....	75,000	2,250
Halibut.	.....	.....	.....	.....	.....	.....	476,000	9,400
Steelhead salmon.	72,930	2,111	.....	.....	.....	.....	.....	.....
Sturgeon.	.....	.....	.....	.....	.....	.....	427,000	5,426
Total	491,634	18,699	.....	.....	.....	.....	897,000	18,226
Tillamook:								
Chinook salmon.	490,000	7,840	.....	.....	.....	.....	.....	.....
Silver salmon.	285,115	5,703	.....	.....	.....	.....	.....	.....
Total	775,115	13,543	.....	.....	.....	.....	.....	.....
All counties:								
Black-cod.	.....	.....	.....	.....	.....	.....	.....	.....
Blueback salmon.	177,780	6,268	168,680	2,281	17,500	481	25,000	4,200
Chinook salmon, fresh.	8,913,730	374,194	2,220,175	109,954	907,349	36,250	.....	.....
Chinook salmon, salted.	51,500	1,410	.....	.....	19,400	778	.....	.....
Cultus-cod.	.....	.....	.....	.....	.....	.....	161,112	8,555
Halibut.	.....	.....	.....	.....	.....	.....	427,250	11,125
Rockfish.	.....	.....	.....	.....	.....	.....	84,010	4,200
Shad.	.....	.....	28,800	2,980	190	19	.....	.....
Silver salmon, fresh.	3,226,889	72,113	39,000	600	961,507	17,980	.....	.....
Silver salmon, salted.	341,560	10,344	.....	.....	17,600	704	.....	.....
Steelhead salmon.	218,160	5,123	382,960	7,734	167,200	8,718	.....	.....
Sturgeon.	78,623	848	.....	.....	.....	.....	660,048	7,973
Crabs.	9,628	265	.....	.....	.....	.....	.....	.....
Grand total	13,014,518	476,500	2,530,815	124,229	1,920,746	61,637	1,280,420	26,103

Table showing by counties, species, and apparatus of capture the yield of the fisheries of Oregon in 1889—Continued.

Counties and species.	Wheels.		Minor nets.		Tongs and hook.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Benton:						
Oysters.....					150,000	\$3,125
Coos:						
Clams.....					48,720	813
Multnomah:						
Blueback salmon.....	186,325	\$7,413				
Chinook salmon.....	114,000	4,500				
Steelhead salmon.....	30,150	1,045				
Crawfish.....			20,000	\$3,000		
Total.....	330,485	13,018	20,000	3,000		
Wasco:						
Blueback salmon.....	515,115	15,077	84,500	1,841		
Chinook salmon.....	265,550	8,307	57,287	1,146		
Silver salmon.....	31,500	630	38,904	540		
Steelhead salmon.....	37,140	998	11,450	229		
Total.....	849,305	25,013	190,227	3,756		
All counties:						
Blueback salmon.....	700,455	22,090	84,500	1,841		
Chinook salmon.....	379,550	12,907	57,287	1,146		
Silver salmon.....	31,500	630	38,904	540		
Steelhead salmon.....	67,290	2,043	11,450	229		
Crawfish.....			20,000	3,000		
Clams.....					48,720	813
Oysters.....					150,000	3,125
Grand total.....	1,174,790	38,680	208,227	6,756	198,720	3,937

Table showing by counties, species, and apparatus of capture the yield of the fisheries of Oregon in 1890.

Counties and species.	Gill nets.		Pound nets and trap nets.		Seines.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Benton:								
Chinook salmon.....	71,180	\$1,348						
Silver salmon.....	35,400	1,686						
Crabs.....	4,200	168						
Total.....	110,780	3,199						
Clackamas:								
Blueback salmon.....	22,340	804						
Chinook salmon.....	124,114	4,964						
Steelhead salmon.....	30,206	604						
Total.....	176,660	6,403						
Clatsop:								
Blueback salmon.....			252,405	\$5,050	11,250	\$225		
Chinook salmon.....	9,178,635	303,143	2,602,475	83,385	208,750	9,000		
Shad.....			49,570	3,905	530	43		
Silver salmon.....	864,556	3,933			77,334	1,547		
Steelhead salmon.....	180,420	1,604	516,000	5,159	60,130	901		
Total.....	9,701,651	308,679	2,430,510	107,550	447,964	11,716		
Columbia:								
Blueback salmon.....	25,000	750						
Chinook salmon.....	187,000	7,480						
Steelhead salmon.....	30,000	1,140						
Sturgeon.....	80,000	900					200,000	\$3,000
Total.....	239,000	10,960					200,000	3,000
Coos:								
Chinook salmon, fresh.....	14,000	145			3,500	40		
Chinook salmon, salted.....	40,000	454						
Cultus cod.....							37,130	1,356
Hellbutt.....							16,450	1,045
Rockfish.....							82,200	4,113
Silver salmon, fresh.....	101,000	1,515			25,000	375		
Silver salmon, salted.....	280,000	4,200						
Total.....	435,000	6,317			28,500	415	135,800	7,114

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Table showing by counties, species, and apparatus of capture the yield of the fisheries of Oregon in 1890—Continued.

Counties and species.	Gill nets.		Pound nets and trap nets.		Seine.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Curry:								
Chinook salmon, fresh.	983,450	\$20,504			116,802	\$2,849		
Chinook salmon, salted.	11,400	456			35,700	1,428		
Silver salmon, fresh.					238,808	4,062		
Silver salmon, salted.	6,000	240			27,100	1,084		
Total	1,000,850	50,200			418,410	10,023		
Douglas:								
Chinook salmon.	7,000	280						
Silver salmon.	13,000	650						
Total	20,000	1,000						
Lane:								
Chinook salmon.	114,000	662						
Silver salmon.	391,021	4,375						
Total	466,500	5,237						
Multnomah:								
Blueback salmon.	420,993	8,148						
Chinook salmon.	429,389	15,123						
Steelhead salmon.	145,843	2,641						
Sturgeon.							1,662,836	\$12,360
Total	996,175	26,511					1,662,836	12,360
Tillamook:								
Chinook salmon.	297,500	2,975						
Silver salmon.	806,900	13,032						
Total	1,104,400	16,007						
All counties:								
Blueback salmon.	408,333	10,792	252,465	\$5,050	11,250	225		
Chinook salmon, fresh.	11,399,187	\$65,891	2,662,473	\$3,286	289,052	11,089		
Chinook salmon, salted.	51,400	910			35,700	1,428		
Culms-cod.							37,120	1,356
Halibut.							16,450	1,045
Rockfish.							82,290	4,113
Shad.			49,570	3,965		43		
Silver salmon, fresh.	1,734,377	25,175			241,142	6,584		
Silver salmon, salted.	298,000	4,440			27,100	1,084		
Steelhead salmon.	374,400	5,289	516,000	5,159	96,130	901		
Sturgeon.	80,650	906					1,251,787	15,281
Crabs.	4,200	198						
Grand total	14,397,625	412,760	3,420,510	107,559	894,904	22,154	1,477,617	22,865
Counties and species.	Wheels.		Minor nets.		Tongs and hoes.		Spears, guns, etc.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Benton:								
Oysters.					132,360	\$2,758		
Columbia:								
Clams.					46,500	775		
Multnomah:								
Blueback salmon.	1,322,965	\$38,600						
Chinook salmon.	1,062,000	\$1,850						
Steelhead salmon.	180,960	5,429						
Fur-seal pelts.								\$15,000
Crawfish.			25,000	\$3,750				
Total	2,465,965	73,977	25,000	3,750				15,000
Wasco:								
Blueback salmon.	1,425,170	42,755	163,740	2,430				
Chinook salmon.	1,018,053	30,502	125,534	1,954				
Silver salmon.	31,620	749	71,260	1,065				
Steelhead salmon.	631,410	11,645	110,000	1,060				
Total	3,006,253	85,651	470,534	7,198				
All counties:								
Blueback salmon.	2,648,155	79,444	163,740	2,430				
Chinook salmon.	2,080,053	62,361	125,534	1,954				
Silver salmon.	31,620	749	71,260	1,065				
Steelhead salmon.	712,360	14,474	110,000	1,060				
Fur-seal pelts.								15,000
Crawfish.			25,000	3,750				
Clams.					46,500	775		
Oysters.					132,360	2,758		
Grand total	5,472,218	159,028	485,534	19,878	178,860	3,533		15,000

Table showing by counties, species, and apparatus of capture the yield of the fisheries of Oregon in 1891.

Counties and species.	Gill nets.		Pound nets and trap nets.		Seines.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Benton:								
Chinook salmon.....	122,359	\$2,337			78,000	\$790		
Silver salmon.....	72,383	1,386			69,000	630		
Crabs.....	2,521	141						
Total.....	286,353	3,865			147,000	1,410		
Clackamas:								
Blueback salmon.....	21,140	846						
Chinook salmon.....	88,790	2,550						
Steelhead salmon.....	16,112	362						
Total.....	125,042	4,758						
Clatsop:								
Black cod.....			115,000	\$2,800	11,200	295	1,000	\$8
Blueback salmon.....	11,064,190	430,352	2,740,325	100,613	412,175	16,480		
Chinook salmon.....							800	\$
Cultus cod.....							28,000	1,400
Halibut.....			62,000	2,720	8,500	510		
Shad.....	122,580	1,325						
Silver salmon.....	102,000	971	542,000	5,500	47,000	558		
Steelhead salmon.....								
Total.....	11,290,580	441,548	2,404,005	121,703	470,855	18,163	29,800	1,410
Columbia:								
Blueback salmon.....	15,000	550						
Chinook salmon.....	115,000	4,000						
Steelhead salmon.....	25,000	580					353,000	3,678
Sturgeon.....	118,001	1,292						
Total.....	270,001	7,002					353,000	3,678
Cook:								
Chinook salmon, fresh.....	14,000	148			15,110	172		
Chinook salmon, salted.....	36,250	412					27,615	1,981
Cultus cod.....							15,000	1,500
Halibut.....							83,230	4,161
Rockfish.....					102,770	1,541		
Silver salmon, fresh.....	101,000	1,515						
Silver salmon, salted.....	259,750	3,806						
Total.....	406,000	5,881			117,880	1,713	126,765	7,135
Curry:								
Chinook salmon, fresh.....	1,117,285	23,519			45,028	1,351		
Chinook salmon, salted.....	12,500	500			48,700	1,948		
Silver salmon, fresh.....					185,067	2,702		
Silver salmon, salted.....	2,500	100			43,900	1,782		
Total.....	1,122,285	24,119			272,115	7,783		
Douglas:								
Chinook salmon.....	8,000	400						
Silver salmon.....	14,000	700						
Total.....	22,000	1,100						
Lane:								
Chinook salmon.....	110,000	825						
Silver salmon.....	223,270	2,350						
Total.....	333,270	4,175						
Multnomah:								
Blueback salmon.....	151,215	4,945						
Chinook salmon.....	325,754	11,561						
Steelhead salmon.....	78,280	2,044					964,622	12,141
Sturgeon.....								
Total.....	555,249	18,550					964,622	12,141
Tillamook:								
Chinook salmon.....	259,000	2,115			49,000	500		
Silver salmon.....	178,500	2,677			40,000	600		
Total.....	437,500	5,792			89,000	1,100		

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Table showing by counties, species, and apparatus of capture the yield of the fisheries of Oregon in 1891—Continued.

Counties and species.	Gill nets.		Pound nets and trap nets.		Seines.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Wasco:								
Silver salmon					5,000	\$190		
Steelhead salmon					3,000	90		
Total					8,000	280		
All counties:								
Black cod							1,000	\$8
Blueback salmon	187,355	\$6,341	115,668	\$3,896	11,260	285		
Chinook salmon, fresh	13,284,929	496,307	2,740,825	109,613	600,173	19,352		
Chinook salmon, salted	48,750	913			48,700	1,948		
Cultus cod							28,415	1,320
Halibut							43,990	2,993
Rockfish							83,220	4,161
Shad			62,000	3,720	8,500	510		
Silver salmon, fresh	721,723	10,055			346,837	5,093		
Silver salmon, salted	256,250	3,008			43,300	1,732		
Steelhead salmon	221,180	3,937	548,600	5,563	50,020	948		
Sturgeon	118,001	1,722					1,234,613	16,019
Crabs	8,521	141						
Grand total	14,841,716	538,791	3,468,065	121,792	1,109,710	30,478	1,495,183	24,570
Counties and species.	Wheals.		Minor nets.		Tongs and hoes.		Spears, guns, etc.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Benton:								
Oysters					149,040	\$3,043		
Clatsop:								
Fur-seal pelts								\$3,480
Cove:								
Clams					45,600	700		
Multnomah:								
Blueback salmon	116,395	\$3,552						
Chinook salmon	165,900	5,167						
Steelhead salmon	47,040	1,438						
Fur-seal pelts								18,000
Crawfish			30,000	\$4,800				
Total	330,235	10,157	30,000	4,800				18,000
Wasco:								
Blueback salmon	288,530	3,055	152,182	2,388				
Chinook salmon	304,053	9,122	73,591	1,119				
Silver salmon	24,440	933	72,590	1,080				
Steelhead salmon	179,040	3,030	74,600	1,140				
Total	806,053	23,640	372,963	5,736				
All counties:								
Blueback salmon	404,915	12,207	152,182	2,388				
Chinook salmon	469,953	14,269	73,591	1,119				
Silver salmon	24,440	933	72,590	1,080				
Steelhead salmon	228,080	5,968	74,600	1,140				
Fur-seal pelts								28,480
Crawfish			30,000	4,800				
Clams					45,600	700		
Oysters					149,040	3,043		
Grand total	1,194,268	22,797	402,963	10,536	191,640	3,803		28,480

Table showing by counties, species, and apparatus of capture the yield of the fisheries of Oregon in 1892.

Counties and species.	Gill nets.		Pound nets and trap nets.		Seine.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Benton:								
Chinook salmon.....	246,790	\$3,021			37,500	\$375		
Silver salmon.....	70,710	1,464			12,000	120		
Crabs.....	4,125	495						
Total.....	327,625	4,980			49,500	495		
Clackamas:								
Blueback salmon.....	27,225	1,089						
Chinook salmon.....	114,112	4,564						
Steelhead salmon.....	24,214	630						
Total.....	165,551	6,283						
Clatsop:								
Blueback salmon.....			494,310	\$12,360	132,285	\$3,620		
Chinook salmon.....	8,314,650	332,622	3,153,925	126,127	699,175	28,567		
Flounders.....							10,000	\$400
Halibut.....							2,000	100
Rockfish.....			94,000	2,820	15,000	450		
Shad.....			1,132,400	11,411	137,240	2,065		
Steelhead salmon.....	46,480	499						
Total.....	8,361,130	333,121	4,674,535	152,718	923,700	31,702	17,000	700
Columbia:								
Blueback salmon.....	20,000	700						
Chinook salmon.....	156,000	6,000						
Steelhead salmon.....	20,000	750					840,512	\$3,093
Sturgeon.....	120,283	1,287						
Total.....	326,283	8,737					840,512	\$3,093
Cook:								
Chinook salmon, fresh.....	25,000	396			27,500	438		
Chinook salmon, salted.....	32,500	517					38,304	1,315
Cultus cod.....							16,870	1,067
Halibut.....							81,115	4,055
Rockfish.....					125,000	1,923		
Silver salmon, fresh.....	157,500	2,114						
Silver salmon, salted.....	227,500	3,500						
Total.....	422,500	6,529			152,500	2,361	134,289	7,097
Curry:								
Chinook salmon, fresh.....	583,570	17,507			102,327	2,464		
Chinook salmon, salted.....	2,000	80			20,200	810		
Silver salmon, fresh.....					290,253	3,874		
Silver salmon, salted.....	3,000	120			21,608	864		
Total.....	588,570	17,707			344,488	7,952		
Douglas:								
Chinook salmon.....	105,000	1,312						
Silver salmon.....	754,600	11,314						
Total.....	859,600	12,626						
Lane:								
Chinook salmon.....	136,350	1,711			4,150	52		
Silver salmon.....	1,198,140	17,612			12,100	182		
Total.....	1,334,490	19,323			16,250	234		
Multnomah:								
Blueback salmon.....	488,195	10,073						
Chinook salmon.....	372,806	14,915						
Steelhead salmon.....	140,983	2,477					1,552,005	17,721
Sturgeon.....								
Total.....	1,002,076	28,065					1,552,005	17,721
Tillamook:								
Chinook salmon.....	220,000	2,260						
Silver salmon.....	1,648,500	15,742						
Total.....	1,868,500	18,002						

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Table showing by counties, species, and apparatus of capture the yield of the fisheries of Oregon in 1892—Continued.

Counties and species.	Gill nets.		Pound nets and trap nets.		Seines.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Wasco:								
Blueback salmon			5,000	\$150	105,430	\$3,184		
Chinook salmon			51,180	2,140	48,540	1,511		
Silver salmon					10,000	300		
Steelhead salmon			3,000	45	48,112	982		
Total			59,180	2,335	212,102	5,937		
All counties:								
Blueback salmon	535,420	\$12,462	490,210	12,510	227,735	6,784		
Chinook salmon, fresh	10,328,970	385,410	3,205,105	128,207	890,192	20,347		
Chinook salmon, salted	94,800	597			20,200	810		
Cultus cod							28,504	\$1,315
Flounders							10,000	400
Halibut							18,670	1,797
Rockfish							80,115	4,255
Shad			94,000	2,820	15,000	450		
Silver salmon, fresh	3,204,450	48,240			350,513	6,300		
Silver salmon, salted	230,500	3,630			21,000	884		
Steelhead salmon	241,077	4,356	1,135,400	11,456	185,322	3,027		
Sturgeon	120,283	1,287					2,300,207	26,714
Crabs	4,135	495						
Grand total	14,690,925	456,473	4,933,715	155,053	1,460,592	48,081	2,534,490	34,471
Counties and species.	Wheels.		Minor nets.		Tongs and boes.		Spears, guns, etc.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Benton:								
Oysters					147,000	\$3,002		
Clatsop:								
Fur seals								\$18,758
Cocoe:								
Clams					49,500	825		
Curry:								
Sea-otter pelts								1,720
Multnomah:								
Blueback salmon	746,210	\$22,366						
Chinook salmon	481,650	13,550						
Steelhead salmon	298,110	8,883						
Fur-seal pelts								34,478
Crawfish			20,000	\$5,000				
Total	1,493,970	44,819	20,000	3,000				34,478
Wasco:								
Blueback salmon	826,713	24,801	295,100	4,437				
Chinook salmon	697,465	20,924	33,900	509				
Silver salmon	274,785	8,234	86,703	1,901				
Steelhead salmon	680,430	12,813	67,803	1,017				
Total	2,459,393	76,772	483,514	7,254				
All counties:								
Blueback salmon	1,572,923	47,187	295,100	4,437				
Chinook salmon	1,149,115	34,474	33,900	509				
Silver salmon	274,785	8,234	86,703	1,901				
Steelhead salmon	954,540	28,066	67,803	1,017				
Fur-seal pelts								43,206
Sea-otter pelts								1,720
Crawfish			20,000	3,000				
Clams					49,500	825		
Oysters					147,000	3,002		
Grand total	3,953,263	118,501	563,514	10,254	190,500	3,827		44,905

Table showing by counties the extent of the salmon-canning industry of Oregon in 1889, 1890, 1891, and 1892.

Counties and years.	No. of employees.	Canneries.			Counties and years.	No. of employees.	Canneries.		
		No.	Value.	Cash capital.			No.	Value.	Cash capital.
Benton:					Lane—cont'd.				
1889.....	34	1	\$10,000	\$25,000	1891.....	32	1	\$13,000	\$7,000
1890.....	23	1	10,000	11,000	1892.....	91	2	24,000	35,000
1891.....	23	1	10,000	10,000	Multnomah:				
1892.....					1889.....	157	3	46,000	28,000
Clatsop:					1890.....	191	3	46,000	133,000
1889.....	684	11	\$70,500	\$54,500	1891.....	158	2	40,000	46,000
1890.....	737	10	347,500	393,500	1892.....	235	3	71,000	150,000
1891.....	530	10	385,000	444,000	Tillamook:				
1892.....	838	10	385,000	466,000	1889.....	58	1	31,000	20,000
Cocoe:					1890.....	59	1	21,000	27,000
1889.....	87	2	14,500	40,000	1891.....	45	1	21,000	10,000
1890.....	37	1	9,000	10,000	1892.....	63	1	21,000	30,000
1891.....	35	1	9,000	30,000	Wasco:				
1892.....					1889.....	60	1	30,000	28,000
Carry:					1890.....	60	2	55,000	70,000
1889.....	105	2	\$2,300	\$5,000	1891.....	60	1	30,000	30,000
1890.....	78	1	30,000	32,000	1892.....	122	3	55,000	70,000
1891.....	72	1	30,000	52,000	Total:				
1892.....	63	1	30,000	35,000	1889.....	1,281	23	\$52,300	\$11,500
Douglas:					1890.....	1,190	17	\$12,500	\$85,500
1889.....	40	1	15,000	30,000	1891.....	1,265	18	\$44,000	\$39,000
1890.....	51	1	13,000	30,000	1892.....	1,510	22	\$66,000	\$35,000
1891.....									
1892.....									
Lane:									
1889.....	40	1	13,000	30,000					
1890.....	36	1	13,000	10,000					

Salmon utilized in canning.

Counties and years.	Chinook.		Blueback.		Steelhead.		Silver.		Total.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Benton:										
1889.....	520,740	\$3,840					309,360	\$4,800	830,000	\$8,640
1890.....	193,000	1,900					55,800	558	248,800	2,458
1891.....	234,000	2,600					14,000	180	248,000	2,780
1892.....										
Clatsop:										
1889.....	8,908,008	430,614	215,378	\$10,000	681,846	\$20,455	371,940	8,097	10,003,240	400,835
1890.....	11,208,418	342,397	342,352	4,847	360,088	8,091	372,590	8,050	12,783,748	361,434
1891.....	12,974,012	555,974	145,800	2,917	802,184	10,428	141,680	1,417	13,063,746	570,808
1892.....	12,338,418	483,635	629,344	14,168	1,363,954	22,148	574,000	5,740	14,915,616	526,687
Cocoe:										
1889.....	32,500	487					455,000	9,100	487,500	9,587
1890.....	30,150	320					158,770	2,381	187,970	2,701
1891.....	30,150	320					262,500	4,037	315,000	4,973
1892.....										
Carry:										
1889.....	871,737	25,067					509,483	10,190	1,381,240	35,277
1890.....	1,048,927	31,441					193,533	3,671	1,242,460	35,112
1891.....	1,182,113	34,870					135,087	2,702	1,317,200	37,572
1892.....	632,637	17,507					147,323	2,960	779,960	20,453
Douglas:										
1889.....	270,900	5,418					534,100	10,682	805,000	16,100
1890.....	105,000	1,312					754,600	11,314	859,600	12,626
1891.....										
1892.....										
Lane:										
1889.....	166,420	3,368					614,810	18,970	781,230	19,738
1890.....	107,100	803					178,231	2,675	285,331	4,478
1891.....	40,700	378					98,770	1,482	148,470	1,855
1892.....	120,800	1,630					1,140,400	17,140	1,260,300	18,776
Multnomah:										
1889.....	822,475	12,800	300,000	14,305	62,240	2,400			744,575	29,705
1890.....	1,003,815	41,514	2,084,045	62,489	845,350	10,300			3,933,210	114,673
1891.....	677,234	20,318	331,835	9,955	216,060	6,483			1,225,149	36,753
1892.....	1,313,300	39,400	2,079,955	60,639	960,370	28,911			4,353,525	129,660
Tillamook:										
1889.....	400,000	7,840					252,000	5,040	752,000	12,880
1890.....	297,500	2,975					840,000	12,600	1,137,500	15,575
1891.....	300,610	3,715					147,000	2,205	456,610	5,920
1892.....	280,000	3,960					1,015,000	15,225	1,305,000	18,585
Wasco:										
1889.....	261,732	8,170	488,032	14,641	31,500	631			781,264	23,451
1890.....	670,671	20,126	1,391,060	41,756	400,000	9,318			2,552,751	71,320
1891.....	228,000	8,800	253,820	7,615	192,220	4,324			672,700	18,739
1892.....	548,130	16,443	708,310	23,045	704,180	13,536	374,180	7,484	2,396,710	60,506
Total:										
1889.....	11,004,000	408,341	1,061,370	39,705	775,598	23,585	3,006,582	64,116	16,448,058	625,740
1890.....	14,615,720	430,206	3,718,677	106,102	1,704,430	28,389	1,584,944	24,805	21,823,088	601,972
1891.....	16,021,450	604,198	781,535	26,487	1,210,444	31,224	737,107	10,745	19,300,545	676,064
1892.....	15,615,875	506,729	3,477,900	97,853	3,648,519	64,590	4,291,908	64,968	36,432,711	790,238

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Extent of salmon-canning industry of Oregon in 1889, 1890, 1891, and 1892—Continued.

Counties and years.	Cases of salmon packed.									
	Chinook.		Blueback.		Steelhead.		Silver.		Total.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.
Benton:										
1889	4,582	\$25,201					4,418	\$19,881	9,000	\$45,082
1890	2,800	14,700					800	3,600	3,600	18,300
1891	3,200	16,800					260	900	3,460	17,700
Clatsop:										
1889	136,129	811,174	3,238	\$18,467	10,331	\$43,006	4,742	19,468	154,440	\$893,015
1890	170,933	968,941	5,072	20,198	12,168	52,072	5,330	19,685	198,108	1,077,864
1891	211,621	1,311,105	2,210	12,154	9,750	39,000	2,024	7,084	225,605	1,360,343
1892	186,673	1,079,103	9,534	62,437	20,969	83,076	8,200	28,700	225,576	1,354,116
Cook:										
1889	500	2,750					6,500	29,250	7,000	32,000
1890	413	2,271					3,268	11,149	2,681	13,430
1891	750	3,750					3,750	15,937	4,500	19,687
Curry:										
1889	13,360	80,160					7,326	34,893	21,196	115,022
1890	16,125	90,289					2,981	12,699	19,106	102,988
1891	17,862	160,139					2,078	9,641	19,940	180,780
1892	9,753	54,505					2,367	9,634	12,000	64,139
Douglas:										
1889	3,870	20,317					7,630	34,335	11,500	54,652
1892	1,500	7,500					10,780	43,130	12,280	50,630
Lane:										
1889	2,406	12,954					8,783	44,788	11,189	58,742
1890	1,530	8,032					2,547	12,353	4,077	20,385
1891	710	3,727					1,411	6,678	2,121	10,805
1892	1,670	8,817					16,420	73,433	18,250	81,250
Multnomah:										
1889	4,613	27,078	5,412	30,020	911	3,943			10,936	61,041
1890	19,912	115,489	29,785	163,672	6,440	25,780			56,147	305,121
1891	9,868	57,224	5,023	27,626	3,068	12,352			17,979	97,213
1892	21,292	123,493	29,180	160,439	13,913	55,652			64,574	339,574
Tillamook:										
1889	7,000	31,500					3,600	14,400	10,600	45,900
1890	4,250	21,250					12,000	48,000	16,250	69,250
1891	4,423	22,115					2,100	8,400	6,523	30,515
1892	4,000	20,000					14,500	58,000	18,500	78,000
Wasco:										
1889	3,739	22,434	7,329	42,141	450	2,050			11,518	66,625
1890	9,661	55,797	19,884	81,676	7,030	28,000			36,575	167,523
1891	3,228	17,609	3,828	18,036	2,746	10,884			9,610	47,729
1892	8,066	49,904	13,403	68,118	19,521	42,084	4,176	20,880	35,765	177,906
Total:										
1889	176,199	1,005,168	15,979	90,628	11,662	49,800	43,509	196,964	247,379	1,372,679
1890	222,446	1,275,808	53,251	268,104	26,608	106,432	22,856	92,777	325,303	1,743,111
1891	250,955	1,420,100	10,859	58,816	15,584	62,236	10,961	46,752	266,079	1,596,904
1892	237,064	1,364,873	51,106	267,944	45,403	181,613	60,293	256,604	394,486	2,085,073

Counties and years.	Quantity of salmon salted.						Barrels salted.					
	Chinook.		Silver.		Total.		Chinook.		Silver.		Total.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	No.	Value.	No.	Value.	No.	Value.
Benton:												
1889			15,000	\$225	15,000	\$225			50	\$400	50	\$400
1890			12,200		132	13,200			44	352	44	352
1891			15,000		175	15,000			50	400	50	400
Clatsop:												
1889			30,000	600	30,000	600			100	800	100	800
1890	240,000	\$6,600	31,500	315	271,500	\$6,915	800	\$7,200	103	840	903	\$8,040
1891			28,500	285	28,500	285			95	760	95	760
1892			30,600	306	30,600	306			102	816	102	816
Curry:												
1889	12,000	340	4,500	90	16,500	430	40	360	15	120	55	480
1891			16,500		330	16,500			55	440	55	440
Lane:												
1889			227,400	4,684	227,400	4,684			758	6,064	758	6,064
1890	7,869	59	113,400	1,700	121,269	1,759	29	236	378	3,060	404	3,296
1891	60,300	452	124,600	1,898	184,900	2,320	201	1,608	415	3,320	616	4,928
1892	10,200	127	48,900	684	59,100	781	84	272	163	1,304	197	1,576
Tillamook:												
1889			33,600	660	33,600	660			112	896	112	896
1890			27,900	418	27,900	418			93	745	93	745
1891			31,500	472	31,500	472			106	840	106	840
1892			34,530	517	34,530	517			115	920	115	920
Total:												
1889	12,000	340	310,500	6,280	322,500	6,590	40	360	1,035	8,280	1,075	8,640
1890	247,869	6,659	173,900	2,432	420,969	9,022	829	7,408	578	4,585	1,402	11,998
1891	90,300	452	214,200	3,087	274,500	3,539	301	1,908	714	5,712	915	7,320
1892	10,200	127	138,000	1,663	138,200	1,779	84	272	430	3,440	484	3,712

Extent of salmon-canning industry of Oregon in 1889, 1890, 1891, and 1892—Continued.

Counties and years.	Total quantity of fresh salmon utilized.									
	Chinook.		Blueback.		Steelhead.		Silver.		Total.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Benton:										
1889.....	320,740	\$3,840					324,200	\$4,904	645,000	\$8,713
1890.....	198,000	1,920					60,000	600	262,000	2,620
1891.....	224,000	2,600					30,000	355	255,000	2,955
Clatsop:										
1889.....	8,300,085	430,614	213,378	\$10,600	661,946	\$30,455	361,940	8,697	10,123,240	470,435
1890.....	11,535,416	348,837	242,352	4,847	800,086	8,601	404,990	5,974	13,084,246	368,349
1891.....	13,974,043	555,874	145,800	2,917	802,164	10,428	170,180	1,708	15,092,246	570,921
1892.....	12,328,418	483,035	630,244	14,109	1,383,054	22,143	604,000	6,046	14,946,216	525,968
Coos:										
1889.....	33,500	457					455,000	9,100	487,500	9,587
1890.....	20,100	320					194,770	2,381	214,870	2,701
1891.....	52,500	836					302,500	4,037	355,000	4,873
Curry:										
1889.....	662,787	26,627					513,963	10,280	1,176,750	26,907
1890.....	1,048,027	31,441					193,533	3,871	1,241,560	25,312
1891.....	1,163,113	34,870					151,587	3,032	1,314,700	27,902
1892.....	632,637	17,507					147,323	2,946	779,960	20,453
Douglas:										
1889.....	270,000	5,418					534,100	10,682	805,000	16,100
1890.....	105,000	1,312					754,600	11,314	859,600	12,626
Lane:										
1889.....	160,420	3,308					642,210	21,054	1,010,630	24,422
1890.....	114,960	802					361,621	4,375	476,580	5,237
1891.....	110,000	625					223,270	3,350	333,270	4,775
1892.....	141,100	1,769					1,166,300	17,784	1,307,400	19,557
Multnomah:										
1889.....	322,475	12,300	350,000	14,305	62,240	2,490			744,575	29,793
1890.....	1,363,815	41,614	2,064,045	62,499	345,350	10,360			3,822,810	114,672
1891.....	677,234	20,216	331,855	9,955	216,000	6,482			1,225,149	36,738
1892.....	1,313,300	39,400	2,079,855	60,630	960,370	26,911			4,353,525	128,950
Tillamook:										
1889.....	490,000	7,840					385,600	5,700	775,600	13,540
1890.....	297,500	2,975					667,900	12,018	1,165,400	15,993
1891.....	300,610	3,715					178,500	2,677	488,110	6,392
1892.....	280,000	3,300					1,049,500	15,742	1,329,500	19,102
Wasco:										
1889.....	261,732	8,179	428,022	14,941	31,500	631			781,254	23,451
1890.....	670,871	20,128	1,391,860	41,756	490,000	9,318			2,552,751	71,200
1891.....	226,000	6,300	253,820	7,615	192,220	4,234			672,040	18,739
1892.....	549,130	16,443	768,210	23,045	704,195	12,536	374,185	7,484	2,395,710	60,506
Total:										
1889.....	11,616,000	408,681	1,061,270	39,705	775,580	22,585	3,317,000	70,277	14,770,530	632,348
1890.....	15,063,506	445,055	3,718,877	109,102	1,704,436	26,949	1,757,444	27,228	22,244,357	610,764
1891.....	16,661,750	624,650	781,535	20,487	1,310,444	21,234	651,307	13,322	19,575,045	680,203
1892.....	15,626,075	568,656	3,477,300	97,553	3,648,519	64,560	4,490,008	65,718	26,571,911	793,917

CURRY COUNTY.

The fisheries of this, the most southern county of the State, continue to be confined to the taking of salmon, although other anadromous species are, in their season, found entering some of the rivers, while numerous other fish are found in the ocean just outside the mouths of the streams. The five rivers of the county in which commercial fishing is prosecuted (Rogue, Windchuck, Obetco, Sikhs, and Elk) have been described in a former report. The Sikhs and Elk are of little importance as fishing streams except to the ranchers living near them.

Rogue River.—This, next to the Columbia, is the largest and longest coast river in Oregon. It has spring and fall runs of chinook salmon, and its fisheries continue of great importance. The catch of salmon shows considerable fluctuation, which is, in a measure, dependent on the amount of artificial propagation carried on at the private hatchery on the river. The marked decrease in the yield in 1892 was thought

to be due to some unknown natural causes. The catch represents about the productive capacity of the river and, as it is all used for canning, a statement of the salmon pack will show the abundance of the fish. The number of canned salmon prepared on the river in each of the ten years ending in 1892 was as follows:

Years.	Cases.	Years.	Cases.
1883.....	18, 156	1888.....	21, 082
1884.....	12, 076	1889.....	20, 226
1885.....	8, 210	1890.....	18, 104
1886.....	12, 147	1891.....	19, 860
1887.....	17, 216	1892.....	12, 000

Salmon fishing on the Rogue River is limited by State law; the open season is from April 1 to November 15. By far the largest part of the catch is made during what is known as the spring run, between April 1 and June 30. The summer catch is taken between July 1 and August 30, and the fall catch represents the remainder of the open season.

Windchuck River.—A few salmon run up this small stream in spring, but the supply is too limited to warrant special operations, and the only fishing is done in September and October, when the regular run is in progress. Two haul seines are here used, and the catch is salted or sold fresh. The catch in the four years ending 1892 was as follows:

Years.	Salted.	Fresh.	Total.
	Pounds.	Pounds.	Pounds.
1889.....	18, 000		18, 000
1890.....	10, 000	85, 000	95, 000
1891.....	10, 000	75, 000	85, 000
1892.....	30, 000		30, 000

The fish sold fresh were sent to a salmon cannery on Smith River, California. In 1889 and 1892, when that cannery was idle, the catch was much reduced and had to be salted owing to lack of a market and absence of facilities for shipping. The few fishermen living on this small but beautiful stream take much interest in the fisheries, and in their primitive way have made some attempts at propagating salmon.

Chetko River.—This small stream has its mouth near the State line of California and Oregon. Twelve fishermen, using two haul seines, represent the full extent of the fisheries. In September chinook salmon are taken, and in October the run consists mostly of silver salmon. When the cannery on Smith River is open, most of the catch finds a market there, otherwise it must be salted. The quantity of the catch in 1889 to 1892, inclusive, was as follows:

Years.	Salted.	Fresh.	Total.
	Pounds.	Pounds.	Pounds.
1889.....	75, 000	23, 000	103, 000
1890.....	10, 000	108, 000	118, 000
1891.....	30, 000	95, 000	125, 000
1892.....	55, 000		55, 000

Suks River.—This river is of some importance to the ranchers living near by, who depend on it for their supply of fish food, and some years a small quantity of fish is salted for market. In 1888, 20,000 pounds of fresh salmon were sold to a cannery on Coquille River, and in 1889 60,000 pounds to a cannery on Elk River. In 1891-92 no fish were taken except those consumed locally by ranchers. The output of this stream in recent years has been as follows:

Years.	Salted.	Fresh.	Total.
	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>
1887.....	45,000	.....	45,000
1888.....	12,000	20,000	32,000
1889.....	20,000	60,000	80,000
1890.....	30,000	.....	30,000

Elk River.—For a short time each year this stream is fished by a few ranchers living near its mouth. The river has only a small run of salmon, and is so inconveniently situated that its fisheries will probably never have very much importance. In recent years the catch of the ranchers has amounted to only about 50 barrels of salt fish. In 1889 a cannery was established in connection with a steam sawmill at the mouth of the river. Some 900 cases of salmon were canned, but the business proved unsatisfactory and was not resumed. The output of the Elk River since 1887 has been as follows:

Years.	Salted.	Fresh.	Canned.	Total.
	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>
1887.....	45,000	.....	.....	45,000
1888.....	12,000	20,000	.....	32,000
1889.....	15,000	20,000	58,500	93,500
1890.....	15,000	.....	.....	15,000
1891.....	15,000	.....	.....	15,000

Sea-otter hunting.—In 1891 the high price of sea-otter pelts led to the formation of two bands of hunters in Curry County. Twelve men, armed with rifles and using two sail and three row boats, skirted the coast from Cape Blanco to Rogue River, weather permitting, during March and April and August and September. At night the men camp at some desirable point. Some of their camping stations are located near high bluffs that have a fringe of timber along the ridge overlooking the sea. Such a spot near the feeding-grounds of the otter is a favorite place for a camp, for in the branches of some tall pine the hunter has his lookout station. A few boughs are chopped off and made into a comfortable resting-place up among the branches, and here one of the hunters will lie for hours, concealed by the thick foliage from view of shore or sea animal. His lofty location gives him an uninterrupted sea view for miles. His boat is close at hand. In case an otter shows up within range of a rifle, it is shot, and the hunter or

one of his companions in hiding is quickly in the boat and going for the game. While some of the men are thus engaged, others may be miles away sailing along the coast with a sharp lookout for otters.

The number of otters killed is small, but they are of large size and have very fine fur, the pelts bringing from \$150 to \$200 each, and in some cases much more. During 1891, 20 otters were secured, and in one week in September, 1892, when the writer visited one of these unique tree-top stations, 8 otters were killed, the total catch for the year being 13, valued at \$133 each. In 1893 the number taken was 17, having an average value of \$157.

COOS COUNTY.

When contrasted with the last investigation, the fisheries of this county present few new features. Coquille River and Coos River and Bay are the fishing-grounds. The only catch of the rivers is salmon. A little more attention is given to the bay fisheries near Bandon and Empire City, where some halibut, perch, and cultus-cod are taken; these fish, with flounders and other varieties of salt-water fish, are found abundantly, but the demand is limited to local use and only small quantities are taken.

Coquille River.—Owing to a number of causes the fisheries of the Coquille have not been up to the average during the past few years. Only one cannery was packing during 1889, 1891, and 1892, and none during 1890. The run of fish was good in 1889, and the single cannery in operation packed 9,115 cases, of which one-sixth were chinook and five-sixths silver salmon; 50 barrels were also salted. The fishermen received 50 cents each for chinook and 30 cents each for silver salmon. Prices of canned salmon were low during the fall and winter, and gave little encouragement to canners; in consequence, during 1890, for the first season in a number of years, no salmon were canned on the river. A light catch was made and 200 barrels were salted. In 1891 the one cannery once more packed, but the run was light and only 2,684 cases were canned and 150 barrels salted, the fishermen receiving 25 cents each for chinook and 15 cents for silver salmon. In 1892 salmon were very abundant, more so than for a number of years. The run of the previous year having been so light, a large run was not expected and preparations had only been made for a small pack. The result of the year's work was 4,500 cases. On account of a scarcity of cans the surplus catch was salted, and 650 barrels were thus prepared. The fishermen received 35 cents each for chinook and 20 cents for silver salmon, the catch consisting of one-eighth chinook and seven-eighths silver salmon. A few fishermen of Bandon, near the mouth of the river, fished outside with hook and line, their catch in 1892 being 10,250 pounds of halibut, 9,112 pounds of cultus-cod, and 36,010 pounds of rockfish.

Coos River and Bay.—The one salmon cannery at Empire City being idle in 1890, 1891, and 1892, the fisheries were not given so much attention as in past years. The salmon catch had to be salted, and

amounted to 900, 800, and 1,400 barrels, respectively, in the years named. A few fishermen fished outside the bay for salt-water fish that they disposed of locally, their catch being 17,000 pounds of cultus-cod, 7,000 pounds of halibut, and 48,000 pounds of rockfish, all taken with hand lines. In addition to the above, the fisheries of Coos Bay and River produced 50,000 pounds of salmon that were sold fresh for local use or shipped to San Francisco.

DOUGLAS COUNTY (UMPQUAH RIVER).

The fishing business of Douglas County is confined to the Umpquah River, and the catch consists only of salmon. Numerous other fish, however, come in from the ocean, among which are herring, sardines, smelt, and just outside the mouth of the river are halibut, cultus-cod, flounders, and rockfish. The section is remote from railroad or steamboat lines, and no attention is given to any fish except salmon, the catch of which is utilized at a cannery at Gardner. In 1889 a good run of salmon entered the Umpquah River. The fishermen disposed of their entire catch at the cannery at Gardner, near the mouth of the river, receiving 45 cents each for chinook salmon and 25 cents each for silver salmon. The cannery packed 11,500 cases. From some unknown cause very few salmon entered the river in 1890 or 1891, during which years the cannery remained closed. Only enough fish to supply the local demand were taken, the catch being 20,000 pounds in 1890 and 22,000 pounds in 1891. During 1892 salmon entered the river in great abundance, and the run in September was very heavy. The pack was only limited by the number of cans on hand and could have been doubled with proper facilities. As it was, 12,280 cases were packed. The fishermen received 25 cents each for chinook and 15 cents each for silver salmon, the latter constituting the bulk of the catch. No salmon was salted during the years mentioned.

LANE COUNTY (SIUSLAW RIVER).

The fisheries of Lane County are confined to the Siuslaw River and the catch consists only of salmon for canning purposes. This river is the dividing line between Lane and Douglas counties. One cannery, located at Florence, near the mouth of the river, was in operation in 1889, 1890, 1891, and 1892; one other cannery, 2 miles above, was idle during the first three years mentioned, but was run in 1892. The salmon pack during these years was 11,189 cases in 1889; 4,077 cases in 1890; 2,121 cases in 1891, and 18,290 cases in 1892.

It will be noticed by the amount packed that the run of fish is uncertain. In common with the other rivers of this State, salmon were very abundant during the fall of 1889, but only a few entered the stream in 1890 and 1891. In the fall of 1892 the run was again heavy and the fish were of good size and quality. The catch in 1892 amounted to 6,018 chinook salmon and 103,410 silver salmon, the average gross

weight of the former being 20 pounds, and of the latter 10½ pounds. In addition to the quantity canned in 1892, 34 barrels of chinook and 163 barrels of silver salmon were salted. The salmon are mostly caught with gill nets, only one haul seine being used. The fishermen comprise various nationalities, one-third of them being native-born, one-half Europeans, and twelve Indians. The cannery employees are Chinese, with the exception of a few Indian women.

This stream has no spring run of salmon. The first fish to enter the river are the chinooks, which arrive about the middle of July; most of the run of this species is in the river by the middle of September, a few also being found up to October 1. Silver salmon first enter the river about the time the run of the chinooks is dropping off, or from the first to the middle of September. In 1892 the first silver salmon were taken September 16. A good run at that time was followed the first week in October by a very large body of fish. When the river was visited by the writer on October 5 silver salmon were very abundant.

Large and small sardines are very abundant between June and September, and other varieties of good food-fish are found in the river at certain seasons, and at all times just outside of the river. From its isolated location, with indirect transportation facilities, no attention is paid to any branch of the fisheries except the salmon.

BENTON COUNTY.

This comparatively small county has two rivers whose fisheries are of considerable prominence, namely, the Alseya and the Yaquina. Each of these near its mouth expands into a long, narrow bay, which takes the name of its respective river. Outside the rivers the fisheries are of no importance, although there is an abundance of salt-water fish on the outlying banks in the near vicinity.

Alseya River.—The run of salmon on this stream was quite large in 1889, and 9,000 cases and 50 barrels were packed at the only cannery in operation. Prices of canned salmon ruled low, and on that account and the poor prospects for satisfactory results the cannery was idle during the following year. Fish were scarce in 1890; the cannery was closed, and besides a few salmon taken for local use only 50 barrels were salted and 6,000 pounds shipped fresh to Portland. In 1891 the fish were not abundant, and only 3,500 cases were canned, 50 barrels salted, and 16,000 pounds shipped away fresh. In 1892 a very large run of salmon entered the river for the first time in three years. The cannery, not looking for the great increase, were prepared for only a light catch, and were obliged to close down early in the season as soon as all the cans had been filled. At the time the river was visited by the writer, on October 8, 1892, it was full of salmon, but no fishing was carried on. With only a limited number of cans to fill and a large run of fish to draw from, the fish packed consisted almost entirely of chinooks, although, as in the other coast rivers, silver salmon comprised fully three-fourths of the run.

Yaquina River.—Since the closing of the small canneries located on this stream in 1889 the fishing business has greatly decreased. A few barrels of salmon are annually picked for their own use by the ranchers living near by, and about 100,000 pounds are shipped fresh to Portland, Salem, and Albany. In the fall of 1892 one man from Oakland, Cal., was engaged in salting salmon. At the time the river was visited by the writer a few hundred barrels had been salted. The fish are mostly silver salmon, averaging 12 pounds each. The fishermen receive only 8 cents apiece for them.

The shipments of fresh salmon from the Yaquina River to Portland and other places in Oregon are quite large, and during the years 1889-1892 were as follows:

Years.	Pounds.	Value.
1889.....	308,137	\$4,188
1890.....	118,000	2,561
1891.....	102,743	2,085
1892.....	125,000	2,500

The Yaquina is noticeable as being the only river on the Pacific Coast in which any considerable quantities of oysters are found. The oysters are natives, having the small size and peculiar flavor of those taken in Willapa Bay and Puget Sound. The quantity of oysters marketed, prices received, and persons employed in the business, etc., show few changes since the last inquiry, although the oystermen report that at present they can not tong and cull more than 2 or 3 bushels a day as against 5 or 6 bushels in past years. By State law the native oyster beds are apportioned out to citizens desiring to work them. No one is permitted to have over 2 acres. The aggregate acreage is small and the available land is all taken up. Oysters are tonged in water 12 to 15 feet deep at low tide. The tongs have handles 15 to 18 feet long, some being 26 feet long.

The price commanded by the oysters remains about the same from year to year, \$2.50 a sack when shipped away, or \$3 a sack for local use being the ruling prices. A sack weighs 105 pounds, and is known as 2 bushels, but is somewhat short of that amount.

The oyster output of the Yaquina River from 1889 to 1892, inclusive, was as follows:

Years.	Sacks.	Value.
1889.....	1,280	\$3,125
1890.....	1,168	2,754
1891.....	1,317	3,043
1892.....	1,285	2,963

Crabs enter the river in considerable quantities. They are picked from the salmon nets and are gathered by the oystermen. The catch, which is small, is mostly shipped to Albany, Salem, and Portland.

The yearly shipments have been as follows:

Years.	Pounds.	Value.
1889.....	6,028	\$365
1890.....	4,200	168
1891.....	3,521	141
1892.....	4,125	165

TILLAMOOK COUNTY.

This county has a frontage of over 50 miles on the Pacific Ocean and is traversed by a number of rivers, chief among which are the Siletz, Nestuggah, Tillamook, and Nehalem, the latter forming the boundary between Tillamook and Clatsop counties. The Nestuggah and Tillamook rivers empty into bays of the same name. The fisheries of the county are restricted to the capture of salmon, which enter the rivers in large quantities during the fall months. The relative abundance of chinook salmon in the streams of this county is greater than farther south. Some seasons the catch of chinooks will be fully equal in weight to that of silver salmon; at other times, as in the year 1892, the catch is often three-fourths silver salmon. Both fish run in greatest abundance about the same time, although the chinooks are the first to arrive, during August, while the silver salmon come in September. The movement of both species is over in November, when the fishing operations cease. A few fish continue to enter the river in the winter, in company with very large numbers of steelheads, but no attention is paid to them.

The entire salmon catch of Tillamook River is utilized at a cannery located near the mouth of that stream. The number of cases packed during each of the four years 1889 to 1892 were as follows:

Species.	1889.	1890.	1891.	1892.
Chinook salmon.....	Cases. 7,000	Cases. 4,250	Cases. 4,423	Cases. 4,000
Silver salmon.....	3,600	12,000	2,100	14,500
Total.....	10,600	16,250	6,523	18,500

The Siletz River flows through an Indian reservation and the entire catch is obtained by Indians, who cure the fish for winter use. The annual quantity of salmon thus prepared is about 60,000 pounds.

CLATSOP COUNTY (NEHALEM RIVER).

The fisheries of the ocean side of this county are carried on only in the Nehalem River. Those in the Columbia River will be included in the general remarks on that river which follow. The Nehalem is a small stream rising in the Coast Range, in Clatsop County, and flowing southwesterly to the Pacific, which it enters at the southern end of the county, whose boundary it forms. Its fisheries, which are of some importance, are carried on in the fall, when there is a run of chinook and silver salmon in the river. With the exception of a few salmon

salted, the entire catch is utilized at the cannery located on the river. Fishing is done by 44 Indian, Russian, and Austrian fishermen, using gill nets. The chinooks taken average about 20 pounds in weight, being somewhat lighter than those of the Columbia; the silver salmon average 10 pounds. The abundance of salmon varies a great deal from year to year; in 1891 the fish were very scarce, while in 1892 the run of silver salmon was phenomenally large; chinooks were less numerous in 1891 and 1892 than during the two preceding years. The catch of each kind of salmon during the four years named was as follows, the figures representing the number of fish taken:

Years.	Chinook salmon.	Silver salmon.	Total.
1890	13,093	29,194	42,287
1891	14,445	33,439	47,884
1892	6,174	17,168	23,342
1893	7,060	57,400	64,460

The quantity and value of the salmon packed and salted in the same years are given in the following table:

Years.	Salmon canned.						Salmon salted.		Total value.
	Chinook.		Silver.		Total.		Barrels.	Value.	
	Cases.	Value.	Cases.	Value.	Cases.	Value.			
1890.....	3,740	\$16,830	3,742	\$14,968	7,482	\$31,798	190	\$900	\$32,598
1891.....	4,127	17,539	4,337	15,144	8,464	32,683	105	840	33,523
1892.....	1,764	7,056	2,034	7,084	3,798	14,140	100	800	14,940
1893.....	2,000	9,000	8,200	32,800	10,200	41,800	102	816	42,616

THE COLUMBIA RIVER.

The fisheries of this river are more extensive than those of any other stream in the United States, and the canning industry dependent thereon is more important than any other similar business connected with the fisheries. The annual output of fish in the Columbia River is greater than from any other river in the country, and no other stream has in the aggregate yielded such large quantities of fish.

The importance of the fishing industry of this river and the increased attention now being given to its condition warrant and make desirable the consideration of the stream as a unit, regardless of the separate interests of the two States whose boundary it forms and whose fisheries are given in detail, by counties, in the tables elsewhere presented.

Reference is seldom made to the fisheries of Washington and Oregon in which the Columbia is not mentioned, although the fishing industry comprises but one of the many branches of commerce connected with this important stream. In the previous report of this Commission on the fisheries of the west coast, the history and methods of the fisheries of the Columbia were discussed at considerable length. It only remains at this time to record such changes as have taken place in the industry during the past three or four years. In the investigation on which this

report is based it was feasible to visit only that part of the Columbia basin within the States of Washington and Oregon. For hundreds of miles east and northeast of that section, however, salmon and other fish in more or less abundance are found, the catch being mostly utilized by ranchers and Indians living near the stream.

The following counties of Washington and Oregon, bordering on the Columbia River and its tributaries, maintain commercial fisheries, the full extent of which is exhibited in the tables elsewhere presented:

Oregon: Clatsop, Columbia, Multnomah, and Wasco counties.

Washington: Pacific, Wahkiakum, Cowlitz, Clarke, Skamania, and Klickitat counties.

Clatsop and Pacific counties, which are at the mouth of Columbia River, have fishing interests on their ocean sides as well as in the river.

Through the courtesy of the numerous firms engaged in the fishing business of the river, the agent was able to obtain from their well-kept records detailed statistics showing the results of the fishery and canning industry of the river in a more comprehensive, useful, and reliable form than have heretofore been obtained.

THE SALMON INDUSTRY.

This branch of the fisheries completely overshadows all others, and is the only one entitled to mention with the exception of the sturgeon fishery, which is of recent development.

In the early years of the salmon-packing business on the Columbia chinook salmon were extremely abundant, comprising the bulk of the run and all of the pack; other varieties were unutilized. With the beginning of a decrease in the abundance of chinook salmon the small blueback salmon was brought more into notice. When the run of chinooks began to fall some of the packers made cautious experimental packs of small quantities of bluebacks to help out their annual pack, although few were willing to concede the advisability of utilizing any fish except chinooks. The bright red color and fine flavor of the bluebacks at once gave the fish a firm hold on the trade and resulted in an active demand, which has continued to the present time. Singular as it may seem, the utilization of the bluebacks and the increasing quantities consumed annually have been attended by an apparent increase in the abundance of the fish.

The accompanying figures will show that while the blueback is found in the Columbia River every year it has of late had its years of abundance and scarcity, thus resembling in its migrations the humpback salmon of Puget Sound. For the past six or eight seasons the even years have witnessed the larger run of bluebacks. Up to a comparatively recent date the steelhead, which has always occurred abundantly in the Columbia, was considered wholly unsuitable for packing. The same cause, however, which brought the blueback into use has led to the utilization of the steelhead. Recently the demand for canned

salmon in certain sections of the country has called for a cheaper grade of fish, which has brought the neglected steelhead into prominence. The silver salmon, which does not enter the river until most of the canneries are closed, has also been canned in some quantities, and both it and the steelhead have met with a ready sale that has yearly shown tendencies to greatly increase.

Fishermen, prices, etc.—Under the laws of Oregon and Washington all fishermen must be naturalized citizens of the United States. Reference to the previous report on the fisheries of this river will show that in 1888 a very large proportion of the fishermen, especially those employed in the gill-net fishery, were aliens. The law is said to be very fully complied with, and the men now profess to be citizens and voters. They represent many nationalities.

The gill-net fishermen belong chiefly to the Latin races. They are united under the name of the Columbia River Fishermen's Protective Union, with headquarters at Astoria, Oreg. The pound-net fishermen are mostly native-born Americans or Scandinavians. These have combined for mutual protection under the name of the Washington Fishermen's Association, with headquarters at Ilwaco, Pacific County, Wash., near which place most of the pound nets employed in the Columbia River are located. These two associations are to some extent antagonistic. Each legislature usually finds representatives from both associations advocating their claims and portraying their supposed grievances. The object of the association of pound-net fishermen is said to be:

To promote and foster the fishing industry of the State of Washington; to assist in building and maintaining fish-hatcheries; to induce legislation, by petition or other lawful means, to protect the industry and those engaged in it; to extend to its members aid and assistance, pecuniary or otherwise, when necessary.

By an agreement between the canners and fishermen, the price to be paid for the catch during the ensuing year is usually agreed upon before the beginning of fishing operations. The failure to agree on a price in 1890 resulted in a strike that was disastrous to the fishermen. For several years prior to 1890 the men had been receiving \$1 each for chinook salmon, which comprised nearly all of the gill-net catch. The men demanded \$1.25 each for their fish, which, being refused, a general strike was begun which lasted throughout the month of April. After losing one month of the short salmon season, the men agreed to the price first offered, but refused to contract at that price for the entire season. One dollar per fish was paid up to June 1, after which the canners would give only 75 cents for chinooks. The most serious outcome of the strike was the attempt of the association fishermen to destroy the nets of a few non-union men. A large body of fishermen belonging to the gill-net association embarked in their boats at Astoria and proceeded several miles up the river, where the nets of the non-union men were set. On beginning their work of destruction, they were met with a volley of rifle balls from the fishermen on the shore,

and the attacking party hastily withdrew to Astoria, leaving several of their number killed and wounded. No further attempt was made to interfere with the non-union fishermen.

The fishing apparatus and methods.—The various appliances employed in the Columbia River for the catching of fish and the manner of operating the same present few changes as compared with the previous investigation. No new method of capture has been devised, although there has been a very marked increase in the number of traps, wheels, nets, etc., operated.

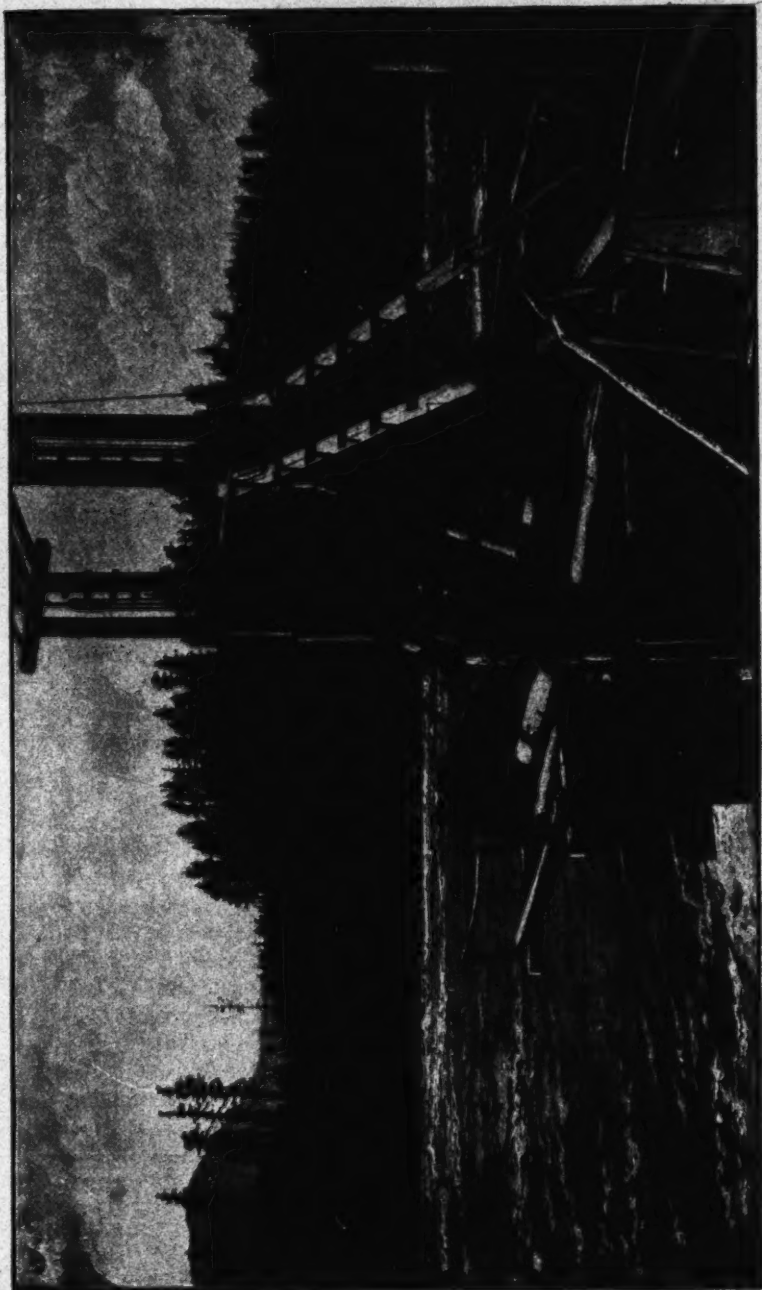
Gill-net fishing is by far the most important branch of the salmon fishery of the Columbia River. More money is invested in the fishery than in any other, and larger quantities of fish are thus taken than by any other means. The number of men interested also outnumbers those employed in all other branches of the salmon fishery. The fishing-grounds covered by the fleet of gill-net boats are mostly near Astoria, extending about 10 miles above that place, and the same distance below. Several hundred boats cruise upstream and as many more descend the river.

The boats are mostly owned by the salmon-packers, but the nets are made and owned by the fishermen. Before the opening of the fishing season the men contract with the cannery, who have supplied their boats, for the entire catch during the year. Fishing is done more or less during the entire twenty-four hours. The best hauls, however, are usually made at night, at which time the fish are less able to see and avoid the drifting net.

The boats drift up and down stream with the tide. If the morning finds a fisherman near the cannery at which he has contracted to deliver his catch, he lands his fish there; if he has drifted to the mouth of the river, his fish are delivered on board a receiving scow of the cannery with which he is connected, an agent on board receipting for the fish, which later in the day are collected by a steam tug and taken to the cannery. The work of the night being over and the fish delivered, the fisherman prepares his breakfast and rests during the time intervening between the tides. His boat is sailed to a quiet spot out of the channel, the anchor is dropped, the sail taken in, and his simple meal cooked over a small oil stove. The rudder is then unshipped and stood up on deck at the stern, the mast is taken down, the sail removed, and the mast is placed lengthwise the boat, one end resting in the bow, the other end on the top of the unshipped rudder, forming a ridgepole for the extemporized tent formed by the sail. Often several hundred boats may be found within a small area, each containing the sleeping fisherman and his assistant.

While chinook salmon constitute the great bulk of the gill-net catch, the quantity of other fish thus taken is considerable and is increasing yearly. With the demand for cheaper grades of salmon the size of the mesh of the gill nets has been reduced.





STATIONARY FISH WHEEL, COLUMBIA RIVER.

Seines are used at Sand Island, near the mouth of the river, and on the sand bars to a distance of 15 to 30 miles above the ocean. These bars as a rule are dry at low tide, at which time the seines are hauled. Up to a comparatively recent time the bars in the Columbia River were owned by the State and their fishing privileges were free. As they became valuable for seine fishing, and had no other use, private parties had them surveyed and bought them from the State at a low price. A title deed having been secured, the value of these bars at once increased from a few dollars to many thousands. The desirable seining-grounds are limited and have fallen into the hands of a few persons, which fact accounts for the relatively small number of seines used, and this form of apparatus is the only one which does not show an increase in recent years.

Fish-wheels are the most interesting form of apparatus used in the Columbia River. Their origin is comparatively recent, and the construction and method of operation are entirely different from any other appliances used for the capture of fish. Owing to their supposed very destructive powers they have been the subject of much antagonism on the part of the general public and the fishermen using other forms of apparatus. Since the first introduction of fish-wheels their number and use have steadily grown, and in 1892 more were employed than at any previous time. As compared with the number of gill nets and pound nets used the number of wheels is very small and has probably nearly reached its limit, as their use is confined to a few desirable places bordering the rapids of the Columbia River at the Cascades and The Dalles, and the favorable sites have passed into the hands of a few persons.

Pound nets are extensively employed in the lower Columbia, the largest number being set in Baker Bay near the mouth of the river. The nets are usually owned by the cannery. Between 1889 and 1892 the increase in the number of these nets on the Columbia was 133 per cent. The pound net has almost completely superseded the old wooden trap that dates back to the early days of the salmon business, and has now almost passed out of existence.

The other minor forms of apparatus employed on the river, namely, dip nets, squaw nets, etc., which are mostly used by Indians, present no marked changes in numbers or in methods of use. The Indians continue to take large quantities of fish in this way for their own use and for sale.

Complete tables are elsewhere given showing the number and value of each different kind of apparatus employed in each county on this river and also showing the quantity and value of each kind of fish taken therein. Some general tables follow showing for the Columbia basin as a whole the quantities of apparatus used and the catch in each. The following table has been prepared to show the increase in the number of pound nets, haul seines, fish-wheels, and gill nets owned or used on the Washington and Oregon sides of the river respectively in 1889 to 1892, inclusive.

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Apparatus employed on the Columbia River in 1889, 1890, 1891, and 1892.

Apparatus.	Years.	Oregon.	Wash- ington.	Total.	Apparatus.	Years.	Oregon.	Wash- ington.	Total.
		No.	No.	No.			No.	No.	No.
Pound nets.....	1889	103	62	164	Fish-wheels.....	1889	31	9	40
	1890	86	70	156		1890	39	12	41
	1891	140	86	226		1891	30	14	44
	1892	247	131	378		1892	40	17	57
Haul seines.....	1889	7	33	40	Gill-nets.....	1889	757	436	1,193
	1890	6	29	35		1890	760	473	1,233
	1891	19	30	49		1891	760	473	1,233
	1892	13	20	33		1892	661	453	1,114

General statistics of the industry.—In the following tables the extent of the salmon fishery and salmon-canning industry of the Columbia basin for the years 1889 to 1892, inclusive, are given:

Number of persons engaged in the salmon industry of Columbia River from 1889 to 1892.

How engaged	Oregon.				Washington.				Total.			
	1889.	1890.	1891.	1892.	1889.	1890.	1891.	1892.	1889.	1890.	1891.	1892.
Fishermen.....	1,606	1,648	1,929	2,064	1,535	1,510	1,575	1,677	3,141	3,158	3,504	3,741
Shoromen and cannery employees.....	870	1,028	1,067	1,100	594	603	654	704	1,464	1,631	1,711	1,804
Total.....	2,476	2,712	2,996	3,164	2,129	2,112	2,229	2,381	4,605	4,344	5,215	5,545

Number and value of boats and apparatus and the value of shore property and cash capital employed in the salmon industry of the Columbia River in 1889, 1890, 1891, and 1892.

Apparatus and capital.	1889.		1890.		1891.		1892.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.
Oregon:								
Boats.....	751	\$99,850	776	\$104,460	876	\$130,815	968	\$131,530
Pile-drivers and scows.....	21	5,900	23	6,300	36	8,300	39	7,400
Pound nets.....	103	72,306	98	76,500	140	98,000	247	173,400
Trap nets.....	2	1,400	2	1,400	2	1,400	3	1,600
Seines.....	7	4,800	6	3,700	19	11,150	12	6,650
Gill-nets.....	757	123,000	760	159,450	790	181,300	661	190,100
Wheels.....	31	120,052	29	107,552	30	108,152	40	132,852
Dip-nets and squaw-nets.....	95	475	85	425	60	300	50	260
Shore property.....		502,955		486,355		485,205		507,405
Cash capital.....		266,000		581,000		520,000		614,000
Total.....		1,354,932		1,524,662		1,565,087		1,784,607
Washington:								
Boats.....	475	60,340	468	50,780	534	67,290	538	64,905
Pile-drivers and scows.....	39	9,050	37	9,850	43	10,750	45	13,550
Pound nets.....	62	48,200	70	55,200	98	77,000	131	103,400
Trap nets.....	2	1,400	2	1,400	2	1,400	3	1,600
Seines.....	23	18,700	29	16,400	30	16,900	26	10,600
Gill-nets.....	436	88,775	432	89,480	472	101,780	453	98,180
Wheels.....	9	25,000	12	48,500	14	45,000	17	49,100
Dip-nets and squaw-nets.....	15	75	18	90	23	115	35	125
Shore property.....		245,950		247,280		231,050		262,800
Cash capital.....		304,000		331,000		332,000		350,000
Total.....		801,420		896,680		973,275		992,700
Total for river:								
Boats.....	1,226	160,190	1,244	164,180	1,410	188,065	1,506	196,435
Pile-drivers and scows.....	60	14,950	60	16,250	73	19,050	74	20,950
Pound nets.....	164	120,506	168	131,700	238	175,000	279	273,800
Trap nets.....	4	3,000	2	1,400	4	3,000	3	2,200
Seines.....	40	22,500	35	18,100	49	28,050	38	15,650
Gill-nets.....	1,193	240,775	1,192	248,930	1,262	283,045	1,114	288,280
Wheels.....	40	145,052	41	156,052	44	153,152	57	181,952
Dip-nets and squaw-nets.....	110	550	103	515	83	415	78	375
Shore property.....		748,905		728,635		776,255		790,605
Cash capital.....		690,000		912,000		852,000		944,000
Total.....		2,156,422		2,383,702		2,478,902		2,717,807

Table showing by apparatus the number, weight, and value of each species of salmon taken in the Columbia River in 1889, 1890, 1891, and 1892.

Apparatus and species.	Oregon.			Washington.			Total.		
	No.	Lbs.	Value.	No.	Lbs.	Value.	No.	Lbs.	Value.
1889.									
Found nets:									
Chinook.....	86,777	2,166,425	\$108,480	40,323	1,068,075	\$50,953	127,100	3,177,500	\$158,823
Blueback.....	33,372	166,900	8,543	24,190	130,985	5,904	57,571	287,885	14,246
Steelhead.....	97,958	879,845	11,388	22,480	234,600	6,737	90,418	604,145	18,138
Total.....	158,107	2,715,890	128,197	86,993	1,353,670	62,904	245,089	4,080,500	191,191
Trap nets:									
Chinook.....	710	17,750	887	2,275	56,875	2,844	2,985	74,625	3,731
Blueback.....	440	4,400	132	803	8,030	241	1,243	12,430	873
Total.....	1,150	22,150	1,019	3,078	64,905	3,085	4,228	87,055	4,104
Seines:									
Chinook.....	24,752	618,800	36,940	63,782	1,594,550	79,727	88,534	2,213,350	110,697
Blueback.....	3,500	17,500	875	2,444	12,225	611	5,944	29,725	1,486
Steelhead.....	16,730	167,200	4,816	43,978	439,789	13,183	60,698	606,989	18,009
Total.....	44,972	803,500	38,631	110,204	2,046,555	93,521	155,176	2,850,055	130,192
Gill nets:									
Chinook.....	352,044	6,301,325	312,563	236,638	5,759,050	281,470	478,697	12,060,375	594,083
Blueback.....	27,623	139,115	4,751	17,218	86,080	3,044	44,841	225,205	7,796
Steelhead.....	16,473	164,730	5,080	15,970	159,700	4,785	32,443	324,430	9,875
Total.....	396,139	6,605,160	322,404	250,241	6,004,830	289,299	555,980	12,610,000	611,763
Wheels:									
Chinook.....	15,182	29,550	12,967	6,978	171,960	6,978	22,658	551,450	19,845
Blueback.....	140,090	450	23,090	54,084	230,322	9,290	191,154	980,772	32,350
Steelhead.....	6,329	31,200	2,043	1,480	14,800	484	7,809	78,000	2,577
Silver.....	4,500	31,500	630	2,440	16,780	503	7,040	48,280	1,133
Total.....	166,101	1,174,780	38,630	61,980	433,802	17,225	228,661	1,608,502	55,855
Dip nets and aquaw nets:									
Chinook.....	2,291	57,283	1,146	1,360	34,000	510	3,651	91,238	1,656
Blueback.....	16,910	84,550	1,841	8,112	40,580	608	25,022	125,110	2,449
Steelhead.....	1,145	11,450	229	509	5,090	77	1,654	16,549	306
Silver.....	5,142	35,994	540	3,175	22,225	833	8,317	58,219	873
Total.....	25,488	189,277	3,756	13,156	101,875	1,628	28,644	291,152	5,284
All apparatus:									
Chinook.....	381,756	9,544,133	498,872	340,669	8,924,450	421,882	722,455	18,168,583	898,754
Blueback.....	221,495	1,108,475	38,899	103,037	490,192	19,427	234,532	1,508,687	58,326
Steelhead.....	79,064	790,605	23,696	85,300	852,090	25,517	164,264	1,643,605	49,213
Silver.....	9,643	67,494	1,170	5,715	39,005	836	15,357	106,490	2,006
Total.....	691,957	11,519,707	539,637	534,621	10,005,647	467,662	1,220,678	21,516,354	960,299
1890.									
Found nets:									
Chinook.....	104,099	2,602,475	78,491	71,346	1,783,659	53,510	175,445	4,396,125	132,001
Blueback.....	80,498	252,480	5,048	42,097	210,485	4,309	92,590	462,590	9,257
Steelhead.....	51,600	516,000	5,160	41,413	414,130	4,140	93,012	930,120	9,300
Total.....	236,197	3,370,940	88,699	154,855	2,408,255	61,859	361,047	5,779,195	150,558
Trap nets:									
Chinook.....				8,629	90,725	2,721	3,629	90,725	2,721
Blueback.....				303	1,515	80	303	1,515	80
Steelhead.....				2,979	29,790	290	2,979	29,790	290
Total.....				8,911	122,030	2,940	6,911	122,030	3,049
Seines:									
Chinook.....	10,750	268,750	8,083	53,752	1,343,800	41,402	64,562	1,612,550	49,465
Blueback.....	2,250	11,250	225	14,292	71,460	1,425	16,542	82,710	1,650
Steelhead.....	9,013	90,130	901	36,701	367,010	3,666	45,714	457,140	4,570
Total.....	22,013	370,130	9,189	104,745	1,782,270	46,493	126,788	2,152,400	55,685
Gill nets:									
Chinook.....	389,196	9,229,700	288,790	211,675	5,368,675	166,167	590,671	14,500,375	454,897
Blueback.....	81,909	409,545	8,440	25,718	128,590	2,584	107,627	549,135	11,324
Steelhead.....	29,593	295,925	8,819	18,625	186,250	2,467	48,229	482,225	6,288
Total.....	480,698	9,935,180	300,089	256,028	5,683,615	171,518	736,736	15,632,795	472,507

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Table showing by apparatus the number, weight, and value of each species of salmon taken in the Columbia River in 1889, 1890, 1891, and 1892—Continued.

Apparatus and species.	Oregon.			Washington.			Total.		
	No.	Lbs.	Value.	No.	Lbs.	Value.	No.	Lbs.	Value.
1890.									
Wheels:									
Chinook.....	83,202	3,060,063	\$62,461	27,972	696,817	\$20,979	111,174	2,779,370	\$83,590
Blueback.....	529,646	2,648,185	79,444	297,226	1,638,465	30,631	726,944	3,684,820	109,875
Steelhead.....	71,226	712,390	16,474	13,801	138,010	2,322	85,040	850,400	18,796
Silver.....	4,660	31,612	749	1,560	10,580	210	6,160	43,112	669
Total.....	668,747	5,472,210	150,008	250,671	1,684,292	53,943	926,318	7,356,502	213,010
Dip nets and squaw nets:									
Chinook.....	5,021	125,534	1,958	2,342	56,088	841	7,263	181,602	2,790
Blueback.....	32,748	163,740	2,450	7,717	38,585	579	40,465	202,325	3,029
Steelhead.....	11,060	110,000	1,660	1,462	14,025	210	12,402	124,025	1,860
Silver.....	10,180	71,260	1,068	4,500	31,560	472	14,680	102,760	1,546
Total.....	58,949	470,534	7,136	15,061	140,178	2,102	74,810	610,712	9,228
All apparatus:									
Chinook.....	572,269	14,906,512	436,643	270,616	9,240,225	265,620	942,884	23,646,747	735,260
Blueback.....	607,046	3,485,155	85,607	297,425	1,497,100	30,558	904,471	4,982,255	135,165
Steelhead.....	172,445	1,734,455	28,004	114,930	1,149,305	13,106	287,375	2,873,760	41,110
Silver.....	14,840	102,872	1,817	6,000	42,000	692	20,840	144,872	2,490
Total.....	1,456,599	19,618,994	565,071	788,971	12,028,640	338,966	2,245,570	31,647,634	904,037
1891.									
Pound nets:									
Chinook.....	186,983	3,734,575	105,983	94,624	2,265,800	94,594	281,607	5,090,175	203,577
Blueback.....	22,968	114,960	2,298	52,164	280,840	5,336	75,132	378,760	7,634
Steelhead.....	54,060	540,800	7,029	44,448	444,464	6,306	98,508	985,264	13,337
Total.....	186,051	3,389,315	118,310	191,236	3,070,904	106,238	377,287	6,451,219	224,548
Trap nets:									
Chinook.....	630	15,750	630	712	17,800	712	1,342	33,550	1,342
Blueback.....	148	749	15	.....	.....	.....	148	749	15
Steelhead.....	786	7,860	118	501	5,010	75	1,287	12,870	193
Total.....	1,564	24,359	763	1,213	22,810	787	2,777	47,160	1,650
Seines:									
Chinook.....	16,480	412,225	16,480	46,606	1,214,900	36,684	65,065	1,627,125	53,573
Blueback.....	2,252	11,260	235	8,325	41,625	1,221	10,577	52,885	1,446
Steelhead.....	5,092	50,920	919	27,409	274,090	5,467	32,561	325,610	6,386
Silver.....	857	5,968	100	.....	.....	.....	857	5,969	190
Total.....	24,680	480,404	17,823	84,390	1,581,215	43,572	109,069	2,011,610	61,395
Gill nets:									
Chinook.....	448,500	11,212,500	447,031	208,633	5,341,525	208,593	657,133	16,554,025	655,624
Blueback.....	25,679	131,395	4,102	15,268	76,840	2,569	40,947	207,735	8,691
Steelhead.....	17,274	172,740	3,541	20,581	205,815	3,466	37,855	378,555	7,069
Silver.....	285	1,905	60	604	4,858	145	970	6,853	205
Total.....	491,738	11,518,630	454,734	245,176	5,628,538	214,786	786,914	17,147,168	669,529
Wheels:									
Chinook.....	23,845	691,153	17,735	9,621	240,540	7,216	33,466	931,693	24,951
Blueback.....	80,004	400,020	12,000	36,675	182,375	5,562	116,679	582,395	17,562
Steelhead.....	27,053	270,530	6,675	11,536	115,360	3,460	38,589	385,890	10,133
Silver.....	4,990	34,440	833	2,730	19,110	573	7,650	53,560	1,406
Total.....	135,922	1,396,143	37,343	60,562	558,385	16,751	196,184	1,854,528	54,094
Dip nets and squaw nets:									
Chinook.....	2,943	73,561	1,119	403	10,063	151	3,246	83,674	1,270
Blueback.....	30,436	152,182	2,268	13,667	60,918	914	44,323	213,100	3,202
Steelhead.....	7,459	74,590	1,149	2,016	20,164	302	9,476	94,764	1,451
Silver.....	10,970	72,501	1,069	4,390	29,230	447	14,696	102,611	2,536
Total.....	51,398	372,954	5,745	20,566	120,395	1,814	71,774	493,909	7,459
All apparatus:									
Chinook.....	601,190	15,029,794	591,967	362,590	9,190,448	348,150	963,779	24,220,242	940,137
Blueback.....	161,567	810,537	21,028	128,319	623,908	15,562	287,826	1,433,635	38,960
Steelhead.....	111,744	1,117,440	19,481	106,551	1,065,500	19,060	216,295	2,182,943	38,511
Silver.....	16,432	115,025	2,272	7,064	50,738	1,165	24,116	166,813	3,427
Total.....	890,933	17,072,796	634,718	603,143	10,932,593	383,967	1,494,016	28,003,633	1,019,075

Table showing by apparatus the number, weight, and value of each species of salmon taken in the Columbia River in 1889, 1890, 1891, and 1892—Continued.

Apparatus and species.	Oregon.			Washington.			Total.		
	No.	Lbs.	Value.	No.	Lbs.	Value.	No.	Lbs.	Value.
1892.									
Found nets:									
Chinook.....	127,027	3,191,075	\$127,027	89,852	2,246,200	\$99,832	217,479	5,537,975	\$227,479
Blueback.....	99,802	400,010	10,010	191,223	956,110	19,123	290,924	1,454,120	29,123
Steelhead.....	112,901	1,120,010	16,009	78,960	709,960	11,423	180,950	1,809,980	28,448
Total.....	339,800	4,610,295	154,536	359,035	3,972,270	120,978	697,902	6,708,085	275,059
Trap nets:									
Chinook.....	530	12,250	530	20	500	20	550	12,750	550
Blueback.....	240	1,200	24				240	1,200	24
Steelhead.....	879	8,790	132	150	1,500	150	1,029	10,290	282
Total.....	1,649	23,240	686	170	2,000	170	1,819	25,240	856
Seines:									
Chinook.....	27,707	689,535	20,688	27,582	689,560	20,687	55,289	1,379,095	41,375
Blueback.....	48,847	227,725	7,122	75,031	375,165	11,256	123,878	612,990	18,378
Steelhead.....	18,544	185,555	3,707	34,843	348,430	6,969	53,387	533,725	10,676
Silver.....	1,428	10,000	300				1,428	10,000	300
Total.....	96,526	1,122,822	31,825	137,456	1,413,155	38,912	233,482	2,595,787	70,727
Gill nets:									
Chinook.....	335,715	8,802,870	335,715	223,197	5,715,075	223,197	578,912	14,508,545	578,912
Blueback.....	94,141	407,705	9,714	21,021	110,105	3,903	115,162	500,810	13,617
Steelhead.....	37,043	370,430	5,066	33,435	334,380	8,000	70,471	704,710	10,956
Silver.....				714	5,000	150	714	5,000	150
Total.....	466,909	9,734,005	371,506	278,360	6,165,060	231,710	765,359	15,899,065	603,005
Wheels:									
Chinook.....	45,904	1,149,115	34,474	19,705	417,620	12,529	65,609	1,566,745	47,003
Blueback.....	314,585	1,572,922	47,187	145,706	728,832	21,865	460,291	2,301,755	69,052
Steelhead.....	95,054	950,540	28,090	45,056	450,560	13,517	140,710	1,407,100	42,213
Silver.....	39,255	274,785	8,234	4,872	34,104	1,022	44,127	308,889	9,257
Total.....	495,798	3,967,362	119,981	210,339	1,631,126	48,924	707,867	5,694,499	167,525
Dip nets and squaw nets:									
Chinook.....	1,256	23,900	500	578	14,450	217	1,934	48,350	726
Blueback.....	29,023	295,109	4,427	15,389	75,900	1,154	74,408	372,009	5,581
Steelhead.....	6,789	67,802	1,017	2,890	28,900	434	9,679	96,702	1,451
Silver.....	12,288	98,703	1,301	4,850	33,950	510	17,236	130,653	1,811
Total.....	79,356	485,514	7,255	23,607	154,200	2,315	103,243	637,714	9,569
All apparatus:									
Chinook.....	556,809	13,970,345	539,541	297,934	9,084,105	346,472	916,323	23,054,450	898,913
Blueback.....	615,938	2,975,892	78,494	448,420	2,347,122	56,700	1,064,358	5,322,814	135,184
Steelhead.....	271,561	2,715,524	56,817	193,265	1,932,650	87,709	464,925	4,649,174	94,026
Silver.....	53,069	371,485	9,835	10,435	73,054	1,663	63,503	444,643	11,518
Total.....	1,497,477	20,133,339	684,187	1,010,155	13,337,941	492,564	2,509,822	33,470,980	1,129,751

Number and location of the salmon canneries operated on the Columbia River, 1889-92.

Location.	1889.	1890.	1891.	1892.	Location.	1889.	1890.	1891.	1892.
Oregon:					Washington:				
Astoria.....	8	8	8	8	Ilwaco.....	1	1	1	1
Clifton.....			1	1	Knappton.....			1	1
Maple Dell.....	1	1	1	1	Chinook.....	1	1	1	1
Warrendale.....	1	1	1	1	Pillar Rock.....	1	1	1	1
Dalles.....	1	1	1	1	Brookfield.....	1	1	1	1
Cellis.....		1		1	Waterford.....	1	1	1	1
Portland.....				1	Sureka.....	1	1	1	1
Total.....	12	12	12	14	Cathlamet.....	1	1	2	1
					Bay View.....	1	1	1	1
					Ragle Cliff.....	1	1	1	1
					Total.....	9	9	10	10
					Grand total.....	21	21	22	24

* This cannery, on the Willamette River, received its fish from the Columbia River.

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Table showing by species the salmon pack of the Columbia River from 1889 to 1892.

States and species.	1889.		1890.		1891.		1892.	
	Cases.	Value.	Cases.	Value.	Cases.	Value.	Cases.	Value.
Oregon:								
Chinook	140,741	\$944,446	196,414	\$1,126,787	222,963	\$1,978,002	214,021	\$1,244,500
Blueback	15,970	90,028	53,351	260,104	10,850	58,818	51,106	267,064
Steelhead	11,093	49,009	20,006	100,432	15,564	62,306	45,403	181,612
Silver							4,170	20,890
Total	168,413	984,973	270,973	1,513,323	249,406	1,400,144	315,316	1,794,976
Washington:								
Chinook	125,956	755,796	139,190	807,306	136,944	758,474	129,039	751,088
Blueback	1,818	10,428	5,994	21,065	4,023	25,436	15,441	84,925
Steelhead	13,000	58,668	16,217	64,969	13,980	55,080	26,945	107,380
Silver								
Total	141,473	824,892	150,401	894,183	149,547	840,820	172,022	944,093
Total for river:								
Chinook	266,697	1,690,182	335,604	1,946,097	353,907	2,038,566	344,267	1,996,388
Blueback	17,797	101,061	57,345	290,069	15,423	84,245	66,547	372,909
Steelhead	25,391	198,567	42,825	171,300	29,564	118,156	72,348	290,992
Silver							4,170	20,890
Total	309,885	1,890,829	435,774	2,407,456	398,953	2,240,964	487,332	2,679,000

In 1893 the pack of chinook salmon amounted to 290,000 cases.

Table showing by months the number and weight of each species of salmon utilized for canning purposes on the Columbia River in 1889, 1890, 1891, and 1892.

Years and months.	Chinook.		Blueback.		Steelhead.		Silver.		Total.	
	No. of fish.	Gross weight.	No. of fish.	Gross weight.	No. of fish.	Gross weight.	No. of fish.	Gross weight.	No. of fish.	Gross weight.
1889.										
April	80,286	2,231,950	36,878	163,380	9,408	94,090			126,550	2,509,110
May	154,117	3,902,925	78,517	382,585	14,709	147,090			247,343	4,432,690
June	168,960	4,223,978	82,458	412,295	82,865	628,950			314,107	5,385,190
July	381,354	7,835,350	36,717	182,565	78,166	761,080			414,137	6,490,586
Total	715,506	17,693,900	232,963	1,161,915	162,978	1,629,760			1,116,997	20,695,496
1890.										
April	32,727	818,175	63,180	315,900	11,005	110,050			106,912	1,244,125
May	239,776	5,919,409	292,589	1,012,990	22,963	229,830			492,299	7,163,130
June	252,754	6,318,856	297,294	1,498,170	67,507	675,070			607,555	8,508,090
July	367,183	8,982,575	150,236	751,496	139,596	1,365,980			647,078	11,690,059
August	13,941	348,525	22,107	110,535	18,539	188,950			51,569	614,410
Total	806,381	22,387,525	725,400	3,677,060	279,608	2,706,860			1,905,467	28,781,395
1891.										
April	82,413	2,000,325	17,437	87,185	5,178	51,790			105,028	2,139,290
May	184,090	4,502,250	55,229	276,145	13,314	133,140			252,633	4,911,535
June	223,994	5,506,100	63,743	418,715	52,676	526,760			340,363	6,544,575
July	399,247	9,956,175	82,869	461,945	97,900	979,000			579,816	11,697,130
August	58,670	1,466,750	3,701	18,595	21,286	212,690			83,657	1,698,115
Total	947,384	23,564,600	192,490	962,495	190,354	1,603,540			1,230,237	20,456,695
1892.										
April	53,021	1,375,525	86,440	430,245	16,580	165,000			155,979	1,912,800
May	187,402	4,667,900	308,948	1,544,730	32,795	327,950			529,233	6,589,980
June	239,486	5,987,450	390,556	1,932,790	141,194	1,411,040			711,230	8,085,180
July	344,421	8,585,525	128,043	640,215	190,829	1,908,300			670,797	11,219,670
August	64,124	2,103,100	19,119	85,554	52,901	529,010			136,225	2,728,590
September					11,292	112,920	18,680	186,420	30,772	340,250
October					22,629	226,290	23,966	237,702	56,596	684,000
Total	908,556	22,738,900	873,108	4,305,530	479,738	4,707,380	53,455	574,182	2,308,855	32,185,995

Scarcely any attention is given to the refuse at the salmon canneries. On the Columbia River this waste yearly averages over 7,000,000 pounds, or 3,500 tons, nearly all of which is emptied into the river. The only efforts to save and utilize this valuable waste product are at Astoria, and there but a small part of the refuse is collected, as will be seen by the following statement of the oil and fertilizer prepared from salmon waste at a small factory:

Years.	Oil.		Scrap.	
	Gallons.	Value.	Tons.	Value.
1880.....	15,000	\$3,000	.....	.....
1881.....	12,000	2,800	35	850
1882.....	28,000	6,240	35	700
1883.....	30,000	6,750	40	800

Summary of the salmon industry.—From 1866, the year in which salmon canning began on the Columbia River, to 1893, inclusive, the gross weight of the salmon utilized for canning was over 658,000,000 pounds, and the value of the pack was over \$59,000,000. The annual results of this industry are shown in the following table:

Summary of salmon-canning industry of the Columbia River from 1866 to 1893.

Year.	Gross weight of salmon utilized.	No. of cases packed.	Value.	Average value per case.	Year.	Gross weight of salmon utilized.	No. of cases packed.	Value.	Average value per case.
	Pounds.					Pounds.			
1866.....	260,000	4,000	\$64,000	\$16.00	1881.....	35,750,000	550,000	\$2,475,000	\$4.50
1867.....	1,170,000	18,000	266,000	14.80	1882.....	35,184,500	541,300	2,690,000	4.90
1868.....	1,620,000	28,000	392,000	14.00	1883.....	40,911,000	629,400	3,147,000	5.00
1869.....	6,568,000	100,000	1,350,000	13.50	1884.....	40,360,000	620,000	3,915,000	4.70
1870.....	9,750,000	150,000	1,800,000	12.00	1885.....	35,997,000	553,800	2,500,000	4.51
1871.....	13,000,000	200,000	2,100,000	10.50	1886.....	39,133,000	448,500	3,135,000	4.76
1872.....	16,250,000	250,000	2,325,000	9.30	1887.....	23,140,000	356,000	2,124,000	5.97
1873.....	16,250,000	250,000	2,350,000	9.40	1888.....	24,231,000	373,477	2,327,961	6.25
1874.....	22,750,000	350,000	2,925,000	7.50	1889.....	20,685,000	309,805	1,900,000	6.14
1875.....	24,875,000	375,000	2,250,000	6.00	1890.....	28,781,805	435,774	2,497,456	5.62
1876.....	27,250,000	450,000	2,475,000	5.50	1891.....	26,450,000	398,883	2,240,964	5.62
1877.....	24,700,000	380,000	2,052,000	5.40	1892.....	32,165,000	467,238	2,679,000	5.70
1878.....	29,900,000	440,000	2,300,000	5.20	1893.....	24,050,000	370,000	2,167,500	5.70
1879.....	31,200,000	480,000	2,640,000	5.50	Total.....	658,438,515	10,008,427	59,029,700	5.85
1880.....	34,450,000	530,000	2,650,000	5.00					

In addition to the salmon used for canning, very large quantities have been salted, consumed fresh locally, or shipped fresh to other parts of the country. The fish thus utilized have aggregated about 192,000,000 pounds, giving 850,000,000 pounds as the total salmon output of the Columbia River since 1866, the value of which, as sold fresh, canned, or salted, was \$66,000,000. As a matter of interest, it may be stated that if the total salmon catch of the Columbia River could be loaded into railroad cars, 42,500 ordinary freight cars would be required to contain the fish, which would make a solid train over 280 miles long.

Exportations of canned salmon from Astoria.—Queries are often made as to where the enormous quantities of salmon prepared in the lower Columbia River and elsewhere on the Pacific Coast are sold. In the early days of the canning industry, and for several years after, nearly

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the entire product was sold in foreign countries, and there is still a large export trade with England, Australia, and other countries. Reference is made to the table of exports from San Francisco for a statement of the destination of the canned salmon sent from that port. Much the largest part of the canned salmon exported from Astoria is consigned to England. The shipments are made exclusively in sailing vessels, which clear from Astoria deeply laden with no other merchandise than canned salmon.

The following is a statement of the shipment by months from 1887 to September, 1892, inclusive:

Year and month.	Destination.	Cases.	Net weight of fish.	Value.
			Pounds.	
1887—July.....	England.....	41,523	1,995,526	\$318,285
August.....	do.....	78,750	3,789,690	498,931
1888—August.....	do.....	61,235	2,938,848	438,024
September.....	do.....	12,969	617,712	90,054
1889—May.....	do.....	8,080	415,200	59,785
July.....	do.....	23,475	1,136,800	161,125
August.....	do.....	74,011	3,553,488	501,839
September.....	do.....	20,334	976,022	134,834
November.....	do.....	8,134	388,952	44,884
1890—March.....	do.....	7,000	336,000	35,990
November.....	do.....	29,701	993,642	136,265
1891—May.....	do.....	750	35,800	4,200
June.....	do.....	1,260	57,600	7,450
July.....	do.....	47,015	2,256,720	217,997
August.....	do.....	35,263	1,692,624	183,724
1892—February.....	Chile.....	3,000	144,000	1,140
March.....	do.....	500	24,000	2,300
June.....	England.....	300	16,800	3,450
August.....	do.....	27,197	1,320,236	180,651
September.....	do.....	46,973	2,254,056	284,518

THE STURGEON FISHERY.

For many years the fishermen of the Columbia River gave scarcely any attention to any fish caught in their nets except salmon. Sturgeon were very plentiful and were caught incidentally in the salmon nets in considerable quantities. A few were saved and sent to the Portland market, and during the winter months some were also shipped by steamer in a round or undressed state to San Francisco, but as a rule the sturgeon was looked upon as a nuisance and in most cases was knocked in the head and set adrift in the river. This practice prevailed up to a comparatively recent date.

In 1888 an eastern firm established experimental fishing-camps at several points on the river with a view to determine the abundance and location of the sturgeon, and, by shipping a few carloads of frozen sturgeon, to demonstrate the feasibility of creating a market in the East. The undertaking proved a success from the outset, and the industry soon attracted other firms from the East, so that in 1892 there were four firms interested in the business. The catch increased from 960,705 pounds in 1889 to 3,006,757 pounds in 1892. The fishery has been of great importance to the fishermen in that it does not interfere in any way with their regular salmon operations, but is prosecuted after the close of the salmon season, and in 1892 added over \$41,000 to their income.

The sturgeon fishery begins immediately at the close of the salmon fishery; that is, about the middle of August or the first of September, and is followed to the opening of the salmon season in the following April. Sturgeon are found in the river throughout the year, but are most abundant during the run of sardines, in July and August, and the run of smelt in January and February, the sturgeon feeding to a considerable extent on these fish. The spawning season appears to be in November and later, thus contrasting strongly with the sturgeon of the Atlantic Coast. Mature roe, suitable for the preparation of caviar, is not found in quantities before November. With the exception of the sturgeon taken incidentally in the salmon nets, which are sold for local use, the fish is neglected during the summer months.

The average gross weight of the sturgeon caught is 150 pounds, the market fish ranging from 40 to 500 pounds. Some fish of relatively small size are caught, and occasionally very large ones are taken. In 1891 a sturgeon taken near Kalama weighed 848 pounds, and one taken off Oak Point in 1892 weighed 800 pounds.

Fishing is prosecuted from the mouth of the river as far up as the Cascades, a few fish being taken above the latter point; but the bulk of the catch is obtained between Astoria and Kalama, a distance of 60 miles. During the early part of the season fishing is done nearer the mouth of the river. The fishermen meet the fish as they come into the stream and move along with them.

With the exception of a few gill nets employed in the lower river the fishing is carried on exclusively with set lines. Each line is provided with 200 to 400 hooks, the hooks being 1 foot apart, and 5 to 8 lines constituting the complement of each fishing boat. When the fishing was first inaugurated lampreys were used for bait, but in the following year the Chinese method of using baitless hooks was found successful and has since been universally practiced. The hooks differ from those used by the Chinese, however, in being barbed, but resemble them in being ground to a needle-like point. The lines, as a rule, are anchored across the bed of the river, in some cases diagonally, and also in the bays formed by the expansion of the river. At intervals of 7 feet a junk bottle or block of wood is fastened to the line to buoy it up and maintain it in position about 4 inches from the bottom. The fishermen closely study the movements and habits of the sturgeon and set their lines on the grounds most frequented. The fish swimming along the bottom of the stream in search of food, as is their habit, must necessarily cross the set lines, and are almost certain to be snagged by one or more of the sharp-pointed hooks. In attempting to free themselves more hooks are apt to be caught in their body and they are held fast. Occasionally fish are taken showing healed-up scars, evidence of previous capture and escape. The lines are tended on the slack tide and are usually visited only once in twenty-four hours.

In 1892 the business of buying, packing, and shipping sturgeon was carried on by two firms located at Portland, Oreg., one at Kal-

ama, Wash., and one at Eanier, Oreg. There were also numerous receiving stations located near the fishing-grounds. If, after tending his lines, the fisherman is near the head station or packing house, he delivers his catch there; but if some distance away he takes it to the nearest receiving station of the firm with which he has contracted to furnish his catch. The prices received by the fishermen are 1 cent per pound as the fish come from the water, or $1\frac{1}{2}$ cents per pound if the viscera have been removed. When the fish contain roe suitable for the manufacture of caviar, the fishermen remove it and receive 4 cents per pound for the same. As soon as the fish are landed at the packing-house a gang of employees dress them for market. In some cases the skin is removed, in others it is left intact. After dressing, the fish are cut into sizes to fit the freezing-pans, which are then placed in bins, covered with ice and salt, and frozen into solid cakes. After freezing, the blocks of sturgeon are removed from the pans and placed in boxes holding from 200 to 250 pounds, which are loaded into refrigerator cars and shipped to market. Most of the catch has been sent to Sandusky, Ohio, Chicago, Ill., and New York City, where it is smoked and finds a ready sale at good prices. The number of car loads of fresh sturgeon sent east was 25 in 1889, 77 in 1890, 102 in 1891, and 115 in 1892.

One product of the sturgeon is used entirely by the Chinese, namely, the spinal marrow. As soon as the fish are landed at the packing establishment a Chinaman, armed with a hook, pulls out enough of the marrow to furnish a good hold, then seizing it, draws the remainder of it out hand over hand. In the average-sized sturgeon the spinal cord is 4 or 5 feet long and consists of long, white connecting links resembling sausages. These are cut open and the jelly-like substance contained within is scraped off and thrown away. This marrow is known by the Chinese and the trade under the name of "bone." It is thoroughly dried, and if not sold to the Chinese in this country it is exported to China, where it is much prized for making soups. The Chinamen pay 4 cents a pound for this "bone" and remove it from the fish themselves.

Valuable as the sturgeon is, there seems to be a large waste that might be utilized for fertilizing purposes. Nearly half the gross weight of the fish is at present thrown away, the head, viscera, and skin being discarded. This refuse contains more or less oil and valuable fertilizing properties, and could, no doubt, be utilized to great advantage.

The sturgeon fishery of this river was investigated for the United States Fish Commission by the writer in 1889 and again in 1892, the various fishing camps and grounds and packing stations being visited each year, and the firms engaged in the business courteously furnished the desired statistical and general information. Up to the date of the last visit sturgeon had been found in ample abundance for the demands of the firms, but the fishermen were beginning to complain of a growing scarcity. As is usual in such cases, more apparatus was required, and this had to be moved from point to point more frequently in order

to keep up the catch. Advice received from this river in 1893 reported a great scarcity of sturgeon, which was followed in 1894 by a still more marked decrease in the abundance of the fish, so that the persons interested were obliged to discontinue the business, and some moved their plants to Grays Harbor, Wash., and Fraser River, British Columbia. The absence of any protective laws or a close season during the spawning period, together with the avidity with which the fishing was prosecuted, have doubtless led to this destruction of a once valuable fishery. The failure of the States to take proper action for the preservation of the sturgeon has no doubt been due to the recent date at which the fishery was established and to the absence of accurate knowledge as to its destructive tendency. The extreme brevity of the existence of this fishery is very suggestive, although in keeping with other rivers of the Eastern States in which the sturgeon fishery has been entirely abandoned.

The extent of the sturgeon fishery of the Columbia River during the four years, 1889 to 1892, is shown in the following tables, relating to persons employed, apparatus, boats, etc., used, and quantity and value of products.

Persons employed in the sturgeon fishery of the Columbia River.

Years.	Fishermen.	Shore employees.	Total.
1889	135	20	155
1890	180	20	212
1891	209	25	237
1892	287	52	340

Boats, apparatus, and other property employed in the sturgeon fishery of the Columbia River.

Items.	1889.		1890.		1891.		1892.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.
Boats	90	\$2,350	122	\$2,050	135	\$2,375	200	\$8,000
Net lines	630	8,300	804	8,540	945	9,450	1,222	12,220
Gill nets	15	1,500	15	1,500	15	1,500	15	1,500
Shore property		17,300		22,500		24,500		27,000
Cash capital		8,900		14,000		21,000		40,000
Total		30,150		50,590		59,825		90,420

Products of the sturgeon fishery of the Columbia River.

Products.	1889.		1890.		1891.		1892.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Flesh	931,645	\$10,004	1,027,424	\$17,275	1,005,005	\$20,447	2,015,420	\$60,004
Eggs	21,270	801	28,000	1,340	47,000	1,907	47,200	1,800
Marrow	18,000	1,000	23,000	2,001	30,000	1,070	84,000	2,841
Scales	2,100	2,002	2,000	2,407	2,117	4,070	4,400	6,700
Total	990,700	13,243	1,090,700	24,420	1,080,000	29,000	2,000,707	61,742

THE FISH TRADE OF PORTLAND, OREGON.

The fish business of Portland is of considerable extent and is one of the most important branches of trade. In the wholesale trade, fresh, pickled, and canned salmon, and fresh sturgeon are handled in large quantities, the fresh fish being shipped in refrigerator cars to points east of the Missouri River. One salmon cannery is located within the city limits, and several others on the Columbia River and in other places are owned by persons having their business headquarters at Portland.

A good variety of fresh-water and salt-water fish may be found in the markets of the city at almost any time in the year. German carp, shad, and catfish, which were only recently introduced into that part of the country, have wonderfully increased and are found constantly in the markets. Their abundance is such that at times it is difficult to sell them at any price. Salmon is the favorite fish and is usually sold at a very reasonable price. Any recent decrease in the quantities of carp, shad, and catfish consumed in Portland may be attributed to the increased use of salmon. Carp and catfish are plentiful around the city docks and are also very abundant in the several streams adjacent to Portland.

The salt-water fish entering into the fresh-fish trade of Portland come largely from Puget Sound. Native oysters are brought from Willapa Bay and the Yaquina River in sacks holding about 100 pounds each. Crawfish are common and come from the sloughs of the Willamette River, a few miles from the city. The crabs and clams which are consumed locally are received from Willapa Bay and the mouth of the Columbia River.

In the following table the extent of the fresh-fish trade of Portland in the years 1889 to 1892 is shown. The values given represent the prices paid by the dealers to the fishermen.

Fresh-fish trade of Portland, Oregon.

Species.	1889.		1890.		1891.		1892.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Calico-cod	30,109	\$1,905	22,220	\$1,118	28,280	\$1,413	30,119	\$1,508
Flounders	60,117	1,904	60,220	1,607	70,220	2,111	70,100	2,203
Haddock	55,000	2,700	51,100	2,055	75,220	2,700	122,500	4,125
Herring	55,214	1,804	60,319	1,815	64,070	1,940	71,070	2,106
Perch	90,212	2,700	90,317	2,600	90,220	2,947	110,100	3,305
Salmon	900,105	22,050	900,222	24,000	900,115	20,400	1,004,220	20,120
Shad	10,143	507	20,300	1,018	81,125	1,500	45,840	2,203
Smelt	100,400	4,900	101,115	2,530	160,070	2,700	300,422	7,510
Trout	12,319	1,000	14,270	2,140	16,100	2,427	19,430	2,914
Other fish	8,328	600	20,000	2,207	62,004	2,034	102,470	4,322
Clams	50,115	1,250	60,240	1,000	70,220	1,700	80,220	2,000
Oysters	200,000	8,000	210,000	8,200	200,000	8,000	210,000	7,400
Crabs	7,200	250	13,200	487	10,000	400	21,000	700
Crawfish	20,000	2,000	25,000	2,750	30,000	4,000	20,000	2,000
Total	1,018,224	\$8,771	1,000,000	\$6,942	1,200,254	\$7,422	2,301,070	\$7,975

WASHINGTON.

GENERAL IMPORTANCE OF THE FISHERIES.

The fisheries of this State are more valuable than those of Oregon, owing to a greater development of the oyster industry, the pelagic fur-seal fishery, and the general fisheries for salt-water fish, although the extent of the salmon fishery is considerably less than in Oregon.

The fishing industry of the State has witnessed a gratifying increase yearly. In the face of the depressed condition of trade during part of the time covered by this report the fisheries underwent a noteworthy development, and the continued increase in the State's population will no doubt lead to a still more important fishing business.

As at present prosecuted the fisheries of Washington of special prominence are the salmon and sturgeon fisheries of the Columbia River, Grays Harbor, and Whatcom County, the oyster industry of Willapa Bay, the general food-fish and fur-seal fisheries of Puget Sound and Strait of Fuca, and the cod fishery of Skagit County.

The fishing industry of Washington in 1892 gave employment to 4,310 persons; the capital invested was \$1,593,567; the value of the products was \$931,568. Statistics showing the aggregate of the business in 1892 and in the three preceding years are given in the following tables:

Persons employed in the fisheries of Washington.

How engaged.	1890.	1891.	1892.
On fishing vessels.....	103	85	217
On transporting vessels.....	28	27	45
In shore fisheries.....	2,528	2,479	2,818
On shore, in canneries, etc.....	704	682	863
Total.....	3,363	3,283	4,943

Vessels, boats, apparatus, shore property, and cash capital of the fisheries of Washington.

Items.	1890.		1891.		1892.	
	No.	Value.	No.	Value.	No.	Value.
Vessels fishing.....	8	\$30,850	9	\$34,550	19	\$45,850
Tonnage.....	319.10		254.57		389.85	
Outfit.....	12	18,945	12	8,775	15	38,905
Vessels transporting.....	12	18,950	12	11,900	15	31,500
Tonnage.....	109.38		107.18		106.11	
Outfit.....		7,820		1,500		2,700
Boats.....	1,277	106,414	1,200	106,175	1,474	122,510
Apparatus—vessel fisheries:						
Seines.....	1	75	1	75	3	625
Gill nets.....						1
Lines.....		700		480		855
Guns and spears.....		1,400		1,400		8,153
Apparatus—shore fisheries:						
Gill nets.....	638	96,967	743	97,890	671	112,197
Pound and trap nets.....	137	93,300	74	56,200	118	117,200
Seines.....	130	38,950	138	36,750	151	45,775
Reef nets.....					30	1,000
Minor nets.....	15	75	16	90	20	115
Wheels.....	9	26,000	13	48,500	14	45,000
Lines.....		3,220		3,600		5,071
Tongs, rakes, and hooks.....		302		5,492		4,196
Guns, spears, harpoons, etc.....		1,950		1,950		1,222
Shore property.....		363,436		308,280		442,550
Cash capital.....		461,960		605,900		695,000
Total.....		1,261,078		1,117,697		1,496,943

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Products of the fisheries of Washington.

Species.	1889.		1890.		1891.		1892.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Black-cod.....			4,790	\$141	12,500	\$405	12,000	\$450
Blueback salmon.....	490,192	\$19,427	1,487,109	39,558	1,145,958	26,764	2,512,822	62,431
Chinook salmon.....	10,207,756	455,919	9,547,343	291,389	9,722,073	358,123	9,943,827	382,393
Cod, salted.....	30,000	2,800			35,000	3,400	538,000	31,500
Cultus-cod.....	297,000	5,300	276,000	5,020	293,000	5,835	336,000	6,875
Dog salmon.....	412,227	4,159	918,773	4,328	1,021,051	9,088	2,216,115	22,190
Flounders.....	105,000	1,700	194,000	2,255	195,150	3,288	184,500	3,191
Halibut.....	625,000	15,649	740,000	18,750	694,500	23,629	1,410,500	28,140
Herring.....	215,000	2,475	407,000	4,590	526,000	5,750	617,112	6,817
Humpback salmon.....	222,262	5,815			733,941	11,697		
Perch.....	25,000	490	44,000	820	80,000	1,500		
Rockfish.....	102,000	2,910	119,000	3,975	136,000	4,275	182,000	4,515
Shad.....	21,010	2,055	44,167	3,519	50,990	3,590	103,350	3,183
Silver salmon.....	4,020,815	86,944	1,419,173	26,021	2,196,280	26,552	2,597,348	60,143
Smelt.....	200,000	3,750	236,000	4,500	272,000	5,100	321,726	6,156
Steelhead salmon.....	690,265	27,984	1,282,615	17,372	1,325,622	24,279	2,419,192	43,419
Sturgeon.....	218,965	2,300	253,263	2,671	503,227	6,486	542,622	5,757
Trout, black-spotted.....	12,000	1,800	15,000	2,700	16,000	2,800	20,000	3,800
Trout, salmon.....	18,000	900	15,000	450	18,000	540	25,000	900
Crabs.....	25,400	840	48,400	1,960	68,600	3,780	78,000	3,550
Shrimp.....	1,500	300	1,475	295	1,900	450	2,000	500
Clams.....	438,000	3,650	694,000	5,200	736,500	6,140	694,000	5,700
Oysters.....	7,547,400	128,004	8,628,000	147,920	9,645,000	154,961	9,695,440	147,905
Whales.....		900		600		2,400		900
Fur seals.....		30,100		50,000		70,179		121,528
Frogs.....	7,500	3,000	10,813	4,325	8,413	3,305	12,125	5,250
Dogfish oil.....	28,509	1,330	30,000	1,400	32,750	1,575	37,500	1,750
Total.....	26,407,582	\$10,926	26,619,821	\$55,119	30,154,688	777,282	36,797,287	\$81,586

The crabs, clams, oysters, frogs, oil, etc., specified by pounds in the foregoing table are, in the following supplementary table, reduced to the basis on which they are sold in the markets, and the number of whales and fur seals are shown:

Products.	1889.	1890.	1891.	1892.
Crabs.....number.....	7,408	18,122	22,200	28,328
Clams.....bushels.....	6,227	8,914	10,525	9,771
Oysters.....do.....	125,790	148,150	196,428	164,994
Whales.....number.....	4	3	12	3
Fur seals.....do.....	2,873	4,620	4,297	9,143
Frogs.....do.....	36,000	51,900	40,380	65,000
Dogfish oil.....gallons.....	3,800	4,000	4,500	5,000

DETAILED STATISTICS.

The following series of tables relates to the fisheries of Washington in the years 1889 to 1892, inclusive. Figures for each county are shown in detail.

Table showing by counties the number of persons employed in the fisheries of Washington in 1889, 1890, 1891, and 1892.

Counties.	1889.					1890.				
	On vessels fishing.	On vessels transporting.	In shore fisheries.	On shore, in canneries, etc.	Total.	On vessels fishing.	On vessels transporting.	In shore fisheries.	On shore, in canneries, etc.	Total.
Chehalis.....			66	8	74			45	6	51
Clallam.....			315		315			322		322
Clarke.....			20		20			20		20
Cowlitz.....			30	2	32			42	5	47
Jefferson.....	12		17		29	12		17		29
King.....	91		235	143	469			267	69	336
Klickitat.....			50		50			55		55
Mason.....			64		64			64		64
Pacific.....		23	576	184	783	22	483	189		694
Pierce.....			118	3	121	7		127	3	137
San Juan.....								6	5	11
Skamania.....			20		20			22		22
Thurston.....			12		12			12		12
Wahkiakum.....		5	1,005	350	1,360	5		977	349	1,331
Total.....	103	28	2,528	704	3,363	95	27	2,479	653	3,253

Counties.	1891.					1892.				
	On vessels fishing.	On vessels transporting.	In shore fisheries.	On shore, in canneries, etc.	Total.	On vessels fishing.	On vessels transporting.	In shore fisheries.	On shore, in canneries, etc.	Total.
Chehalis.....			43	4	49			68	19	78
Clallam.....	68		356		423	92		287		379
Clarke.....			20		20			20		20
Cowlitz.....			22	7	29			38	11	49
Jefferson.....	20		17		37	26		17		43
King.....	96	5	323	82	506	155	4	363	69	605
Klickitat.....			68		68			63		63
Mason.....			64		64			64		64
Pacific.....		26	651	262	939	32	726	296		1,057
Pierce.....	7		139	5	151	20		150	7	177
San Juan.....			6		6			6		6
Skagit.....	32			3	35				3	35
Skamania.....			22		22			28		28
Thurston.....			14		14			14		14
Wahkiakum.....		5	857	332	1,194	5		953	346	1,304
Whatcom.....		4	204	72	280	3	4	185	82	274
Total.....	221	40	2,818	778	3,857	331	45	3,082	852	4,310

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Table showing by counties the nativity of persons employed in the fisheries of Washington in 1892.

Counties.	Countries.											
	United States.	Russia.	Sweden.	Norway.	Austria.	Greece.	Italy.	Germany.	France.	Great Britain.	Holland.	China.
On vessels fishing:												
Challam	7											85
Jefferson	16											10
King	166		16	6					2	9		16
Pierce	20											
Skagit	24		8	3								3
Whatcom	3											
Total	176		19	9					2	9		114
On vessels transporting:												
King	4											
Pacific	22											
Wahkiakum	5											
Whatcom	3								1			
Total	44								1			
In shore or boat fisheries:												
Chehalis	40	14	3	6								
Challam	16		11									
Clarke	20											
Cowlitz	38											
Jefferson	8			4								
King	56		59	49	102	55	40					
Klickitat	23											
Mason	45											
Pacific	385	77	83	48	18		2	9	1	10		
Pierce	25		50	41			5		3			
San Juan	6											
Skamania	6	19	3									
Thurston												
Wahkiakum	27	119	274	115	60	63	8	14	2	28	3	
Whatcom	50		20	15								
Total	607	329	508	278	180	118	55	23	5	49	2	6
On shore, in canneries, etc.:												
Chehalis	10											
Challam	10											
Cowlitz	20											
King	20											
Mason	6											
Pacific	63	4	1				1		1	229		
Pierce	7											
San Juan	5											
Skagit	3											
Wahkiakum	20		1				1			305		
Whatcom	17									50		
Total	190	4	2				2		1	691		17

Table showing by counties the nationality of persons employed in the fisheries of Washington in 1892.

Counties.	Countries.															Total.
	United States.	Russia.	Sweden.	Norway.	Austria.	Greece.	Italy.	Germany.	France.	Great Britain.	Holland.	China.	Portugal.	Japan.	American Indian.	
On vessels fishing:																
Challam	5		2												85	92
Jefferson	16														10	26
King	91		23	13					3	10					18	155
Pierce	20														20	20
Skagit	23		5	3									2		3	25
Whatcom	3															3
Total	157		30	16					3	10			2		114	331
On vessels transporting:																
King	4															4
Pacific	32															32
Wahkiakum	5															5
Whatcom	2									2						4
Total	43									2						45
In shore or boat fisheries:																
Chehalis	68															68
Challam	27														360	387
Clarke	30															30
Cowlitz	38															38
Jefferson	12														5	17
King	363															363
Klickitat	23														40	63
Mason	45											8			11	64
Pacific	543														153	736
Pierce	150														20	150
San Juan	6															6
Skamania	28															28
Thurston															14	14
Wahkiakum	953															953
Whatcom	85														100	185
Total	2,341											8			723	3,063
On shore, in canneries, etc.:																
Chehalis	10															10
Cowlitz	10											1				11
King	20											46		17		83
Mason	6															6
Pacific	66		4													226
Pierce	7											220				7
San Juan	5															5
Skagit	3															3
Wahkiakum	41											305				346
Whatcom	17											50			15	82
Total	185	4										631		17	15	822

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Table showing by counties the apparatus and capital employed in the fisheries of Washington in 1889, 1890, 1891, and 1892.

Years and counties.	Vessels fishing.				Vessels transporting.				Boats.	
	No.	Tonnage.	Value.	Value of outfit.	No.	Tonnage.	Value.	Value of outfit.	No.	Value.
1889.										
Chehalis.....									15	\$1,800
Clallam.....									174	16,125
Clarke.....									10	750
Cowlitz.....									45	2,350
Jefferson.....	2	11.00	850	815					8	1,380
King.....	6	287.50	29,900	16,030					97	7,885
Klickitat.....									9	140
Mason.....									118	3,580
Pacific.....					11	72.37	\$0,050	\$020	205	80,484
Pierce.....									93	5,430
Skamania.....									5	120
Thurston.....									30	1,000
Wahkiakum.....					1	37.01	7,000	5,800	378	55,800
Total.....	8	319.10	30,850	10,245	12	109.38	16,050	7,820	1,277	108,414
1890.										
Chehalis.....									25	1,750
Clallam.....									177	10,250
Clarke.....									14	1,050
Cowlitz.....									55	2,950
Jefferson.....	2	11.00	850	230					8	1,330
King.....	5	223.05	21,900	7,705					81	6,930
Klickitat.....									140	3,580
Mason.....									118	3,580
Pacific.....					11	73.17	4,900		261	18,850
Pierce.....	2	178.62	1,700	850					97	2,745
San Juan.....									4	250
Skamania.....									6	120
Thurston.....									30	1,000
Wahkiakum.....					1	37.01	7,000	1,500	355	54,200
Total.....	9	264.57	24,550	6,775	12	107.18	11,900	1,500	1,280	106,175
1891.										
Chehalis.....									25	1,750
Clallam.....	3	98.40	3,100	2,205					205	11,900
Clarke.....									11	825
Cowlitz.....									54	2,950
Jefferson.....	4	22.06	1,650	720					8	1,330
King.....	7	261.06	24,400	3,255	1	33.06	10,000	1,000	98	8,730
Klickitat.....									10	160
Mason.....									118	3,580
Pacific.....					12	88.55	10,800	300	385	31,647
Pierce.....	5	28.06	2,700	1,325					162	4,070
San Juan.....									4	250
Skagit.....	2	178.62	14,600	2,800					6	120
Skamania.....									31	1,018
Thurston.....									37	52,800
Wahkiakum.....					1	37.01	7,000	1,500	60	3,000
Whatcom.....					1	11.89	3,500	900		
Total.....	19	588.83	45,850	10,305	15	166.11	31,300	3,700	1,474	122,510
1892.										
Chehalis.....									49	3,025
Clallam.....	7	178.29	4,700	3,205					210	12,250
Clarke.....									13	975
Cowlitz.....									58	2,800
Jefferson.....	8	78.90	4,250	1,610					8	905
King.....	15	448.83	40,800	15,075	1	10.82	3,500	750	107	11,005
Klickitat.....									11	170
Mason.....									118	3,580
Pacific.....					15	113.94	12,400	2,100	306	40,185
Pierce.....	5	108.79	18,180	4,610					130	5,075
San Juan.....									4	250
Skagit.....	2	178.62	14,600	3,100					6	120
Skamania.....									31	1,018
Thurston.....									37	48,175
Wahkiakum.....					1	37.01	7,000	1,500	40	2,750
Whatcom.....	1	22.73	2,000	80	1	14.18	5,000	1,400		
Total.....	33	1,009.17	85,730	27,880	18	175.93	28,900	5,750	1,080	123,830

Table showing by counties the apparatus and capital employed in the fisheries of Washington in 1889, 1890, 1891, and 1892—Continued.

Years and counties.	Apparatus—vessel fisheries.				Apparatus—shore fisheries.							
	Seines and gill nets.		Value of lines.	Value of guns and spears.	Gill nets.		Pound and trap nets.		Seines.		Reef nets.	
	No.	Value.			No.	Value.	No.	Value.	No.	Value.	No.	Value.
1889.												
Chehalis.....					59	\$3,250	28	\$19,400				
Clarke.....					39	925			2			
Cowlitz.....					20	3,075						
Jefferson.....	1	\$75	\$70		103	3,312	9	5,500	20	11,900		
King.....			630	\$1,400	25	375	2	800				
Klickitat.....					60	11,650	91	61,800	2	1,000		
Pacific.....							2	1,000	65	8,800		
Pierce.....					20	300						
Skamania.....					312	77,100	5	3,200	31	17,700		
Wahkiakum.....												
Total.....	1	75	700	1,400	638	96,987	137	92,300	120	38,950		
1890.												
Chehalis.....					70	2,000						
Clarke.....					50	1,250						
Cowlitz.....					30	4,500						
Jefferson.....	1	75	70						2	150		
King.....			270	1,400	310	4,000			23	10,200		
Klickitat.....					25	375	2	800				
Pacific.....					22	7,500	68	54,400	2	1,000		
Pierce.....			150				2	1,000	71	9,550		
San Juan.....									2	450		
Skamania.....					20	300						
Wahkiakum.....					306	77,305	2	1,400	27	15,400		
Total.....	1	75	490	1,400	743	97,830	74	58,200	126	36,750		
1891.												
Chehalis.....					70	2,000						
Clallam.....				853					2	200		
Clarke.....					43	1,025						
Cowlitz.....					22	3,375						
Jefferson.....	1	75	150									
King.....			275	1,700	285	4,687			30	15,625		
Klickitat.....					28	395	2	800				
Pacific.....					79	21,100	107	108,600	2	1,000		
Pierce.....			230				2	1,000	81	10,800		
San Juan.....									2	450		
Skagit.....			300	600								
Skamania.....					304	76,905	5	3,200	28	15,800		
Wahkiakum.....					20	1,500	2	2,000	6	2,100	20	\$1,000
Whatcom.....												
Total.....	1	75	955	3,153	871	112,187	118	117,300	153	46,225	30	1,000
1892.												
Chehalis.....					68	3,960						
Clallam.....	1	50	25	1,117					5			
Clarke.....					49	1,000						
Cowlitz.....					34	3,675						
Jefferson.....	1	75	345									
King.....			565	2,600	310	5,250	2	1,500	26	20,000		
Klickitat.....					32	410	2	800				
Pacific.....					103	30,480	141	100,800	4	2,000		
Pierce.....			450				2	1,000	91	12,050		
San Juan.....												
Skagit.....			300	600					2	450		
Skamania.....					29	300						
Wahkiakum.....					261	68,055	4	2,500	12	7,400		
Whatcom.....			50		20	1,500	5	8,500	10	3,500	10	500
Total.....	2	125	1,785	4,517	885	112,500	187	124,700	162	46,650	10	500

a Gill net.

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Table showing by counties the apparatus and capital employed in the fisheries of Washington in 1889, 1890, 1891, and 1892—Continued.

Years and counties.	Minor nets.		Wheels.		Value of lines.	Value of tongs, rakes, and hoes.	Value of guns, spears, harpoons, etc.	Value of shore property.	Cash capital.	Total investment.
	No.	Value.	No.	Value.						
1889.										
Chehalis.....								\$34,000	\$30,000	\$68,150
Clallam.....					\$625		\$1,050			12,000
Clarke.....			2	\$4,000				2,000		7,475
Cowlitz.....					2,100			7,000	3,000	17,475
Jefferson.....					305			2,000		5,125
King.....						\$50		41,500	45,000	137,507
Klickitat.....	15	\$75	3	11,500						12,800
Mason.....						173		1,000	5,000	9,725
Pacific.....								80,400	134,000	319,314
Pierce.....			4	10,500	50	130		5,000	5,000	24,050
Skamania.....										10,920
Thurston.....						40				1,040
Wahkiakum.....								190,350	239,000	597,250
Total.....	15	75	9	\$6,000	2,830	392	1,050	\$63,450	\$461,000	1,261,678
1890.										
Chehalis.....								1,000		5,350
Clallam.....					850		1,050			12,150
Clarke.....			2	4,000				2,000		8,300
Cowlitz.....					2,300			7,000	3,000	19,830
Jefferson.....					305			2,000		5,100
King.....						50		44,000	28,000	124,505
Klickitat.....	18	90	3	11,500						12,900
Mason.....						172		1,000	5,000	9,722
Pacific.....						3,100		58,400	114,000	264,150
Pierce.....					55	130		5,000	5,000	27,820
San Juan.....								1,000		1,700
Skamania.....			7	33,000						33,420
Thurston.....						40				1,040
Wahkiakum.....								189,880	250,000	596,685
Total.....	18	90	12	\$8,500	3,030	3,492	1,050	\$66,280	\$495,000	1,117,687
1891.										
Chehalis.....								1,000		5,350
Clallam.....							875	1,050		20,125
Clarke.....			3	4,000				2,000		7,850
Cowlitz.....					2,000			7,000	3,000	21,385
Jefferson.....					305			2,000		5,340
King.....						50		42,000	45,000	154,975
Klickitat.....	23	115	5	21,500						22,970
Mason.....						43	172	1,000	5,000	9,775
Pacific.....						3,100		140,650	177,000	494,197
Pierce.....					54	135		25,000	20,000	65,955
San Juan.....								1,000		1,700
Skagit.....								5,500	5,000	28,300
Skamania.....			7	19,500						19,920
Thurston.....						43				1,040
Wahkiakum.....								190,400	207,000	554,505
Whatcom.....								25,500	30,000	70,000
Total.....	23	115	14	\$45,000	3,071	4,105	1,222	\$442,550	\$495,000	1,468,562
1892.										
Chehalis.....								8,000	30,000	44,995
Clallam.....					900		1,700			28,447
Clarke.....			3	5,000				3,000		9,975
Cowlitz.....					2,000			7,500	3,000	22,775
Jefferson.....					305			2,000		5,900
King.....						50		45,000	50,000	190,725
Klickitat.....	30	150	6	25,000						24,400
Mason.....						172		1,000	5,000	9,722
Pacific.....						3,100		142,800	213,000	555,996
Pierce.....					100	143		25,000	25,000	91,808
San Juan.....								1,000		1,700
Skagit.....								5,500	5,000	28,500
Skamania.....			8	21,000						21,430
Thurston.....						40				1,055
Wahkiakum.....								147,500	172,000	452,130
Whatcom.....								30,000	40,000	96,280
Total.....	30	150	17	\$48,000	4,085	5,505	1,700	\$417,800	\$546,000	1,593,567

Table showing by counties and species the yield of the fisheries of Washington in 1889.

Species.	Chehalis.		Clallam.		Clarke.		Cowlitz.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Blueback salmon.....					51,750	\$1,737	13,000	\$390
Chinook salmon.....	1,085,075	\$31,701			30,200	1,310	81,000	3,240
Cultus-cod.....			130,000	\$2,500				
Dog salmon.....			47,210	985				
Halibut.....			300,000	4,500				
Humpback salmon.....			28,350	810				
Rockfish.....	1,353,200	32,944	90,000	1,650				
Silver salmon.....			96,440	2,695				
Steelhead salmon.....					300		42,325	1,143
Sturgeon.....							218,905	2,300
Whales.....				800				
Total.....	2,367,275	53,745	683,000	13,920	90,870	3,310	281,905	7,740

Species.	Jefferson.		King.		Klickitat.		Mason.		Pacific.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Blueback salmon.....					172,817	\$5,898			111,850	\$5,536
Chinook salmon.....			30,248	\$1,823	112,925	5,407			1,832,953	71,569
Cod, salted.....			30,000	2,300						
Cultus-cod.....	34,000	\$600	8,000	100						
Dog salmon.....	4,000	80	282,247	2,415						
Flounders.....			25,000	500						
Halibut.....	61,000	1,420	320,000	9,000						
Herring.....	15,000	300	35,000	525						
Humpback salmon.....			184,437	2,784						
Perch.....			22,000	460						
Shad.....									14,125	1,413
Silver salmon.....	14,000	580	1,060,000	13,922	30,000	830			1,195,000	29,850
Smelt.....	25,000	750	33,000	825						
Steelhead salmon.....			90,570	1,811	10,870	326			351,530	7,544
Crabs.....			14,400	600						
Clams.....			108,000	900						
Oysters.....							1,500,000	\$27,500	5,000,400	81,804
Fur seals.....			30,190							
Frogs.....			7,500	3,000						
Total.....	143,000	3,730	2,385,352	72,300	335,617	10,727	1,500,000	37,500	8,817,848	197,885

Species.	Pierce.		Skamania.		Thurston.		Wahkiakum.		Total.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Blueback salmon.....			123,815	\$5,443			7,400	\$373	490,192	\$19,427
Chinook salmon.....	15,900	\$460	99,375	4,601			7,970,100	348,117	10,207,756	455,815
Cod, salted.....									80,000	2,800
Cultus-cod.....	105,000	2,100							267,000	5,860
Dog salmon.....	72,870	720							412,237	4,180
Flounders.....	80,000	1,200							105,000	1,700
Halibut.....	4,000	120							695,000	15,640
Herring.....	165,000	1,650							215,000	2,475
Humpback salmon.....	98,615	2,041							323,393	5,615
Perch.....									23,000	480
Rockfish.....	43,800	1,380							102,000	2,610
Shad.....	1,000	55					5,800	568	21,010	3,065
Silver salmon.....	287,535	6,250							4,020,815	98,944
Smelt.....	145,000	3,175							202,000	2,750
Steelhead salmon.....			5,010	190			553,500	16,807	902,905	27,864
Sturgeon.....									218,905	2,300
Trout, black-spotted.....	12,000	1,800							12,000	1,800
Trout, salmon.....	12,000	360							12,000	360
Crabs.....	8,000	240							22,400	840
Shrimp.....	1,500	300							1,500	300
Clams.....	330,000	2,750							628,000	6,050
Oysters.....	300,000	7,500							7,547,400	128,094
Whales.....					78,000	\$1,800				500
Fur seals.....										30,190
Frogs.....									7,500	3,000
Dogfish oil.....	26,500	1,320							26,500	1,320
Total.....	1,770,000	32,370	237,900	9,624	78,000	1,800	7,607,065	205,085	20,407,502	810,236

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Table showing by counties and species the yield of the fisheries of Washington in 1890.

Species.	Chehalis.		Clallam.		Clatsop.		Cowlitz.		Jefferson.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Blueback salmon	75,000	\$1,875			152,170	\$3,055	30,000	\$700		
Chinook salmon					75,300	2,350	137,000	5,480		
Cutthroat cod			120,000	\$2,350					28,000	\$710
Dog salmon			63,800	1,275					6,000	120
Halibut			280,000	4,200					80,000	1,900
Herring									17,000	340
Rockfish			65,000	1,725						
Silver salmon	150,000	3,750	96,200	2,000			37,150	743	16,000	400
Smelt					34,600	247			30,000	600
Steelhead salmon							70,850	1,717		
Sturgeon							255,203	2,671		
Whales				600						
Total	225,000	5,625	625,000	13,150	252,150	5,561	520,203	11,511	167,000	4,350

Species.	King.		Klickitat.		Mason.		Pacific.		Pierce.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Black cod			357,535	\$9,913			213,515	\$4,270	4,700	\$141
Blueback salmon			212,410	5,331			2,119,975	63,602		
Chinook salmon	60,790	\$2,686							28,800	1,153
Cutthroat cod	11,000	230							117,000	2,940
Dog salmon	745,485	5,800							103,488	1,034
Flounders	40,000	980							85,000	1,275
Halibut	177,000	5,310							203,000	5,340
Herring	70,000	1,050							170,000	1,700
Perch	44,000	880								
Rockfish										
Shad							26,125	2,090	43,000	1,350
Silver salmon	719,700	13,952	42,000	682					368,122	7,814
Smelt	66,000	1,650							150,000	2,350
Steelhead salmon	172,400	3,449	117,875	1,723			412,430	4,123		
Trout, black-spotted									15,000	2,700
Trout, salmon									15,000	450
Crabs	38,400	1,900							10,000	200
Shrimp									1,475	295
Clams	204,000	1,700							420,000	3,500
Oysters							100,000		290,000	7,312
Fur seals										
Frogs	10,612	4,325								
Dogfish oil									30,000	1,400
Total	2,401,651	102,607	720,820	17,859	1,524,000	33,160	9,670,345	174,663	2,185,413	41,077

Species.	San Juan.		Skamania.		Thurston.		Wahkiakum.		Total.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Black cod									4,700	\$141
Blueback salmon			684,745	\$20,442			50,135	\$1,170	1,487,100	30,558
Chinook salmon			518,675	15,540			8,270,000	193,188	9,847,943	201,833
Cutthroat cod									276,000	5,600
Dog salmon									918,773	8,338
Flounders									134,000	2,350
Halibut									740,000	16,750
Herring	150,000	\$1,500							407,000	4,500
Perch									44,000	880
Rockfish									110,000	3,075
Shad							8,605	705	44,107	3,519
Silver salmon									1,419,173	30,421
Smelt									200,000	4,500
Steelhead salmon			20,000	752			835,340	5,361	1,252,615	17,972
Sturgeon									255,203	2,671
Trout, black-spotted									15,000	2,700
Trout, salmon									15,000	450
Crabs									43,400	1,900
Shrimp									1,475	295
Clams									424,000	3,500
Oysters							70,000	\$1,920	8,200,000	167,800
Whales										600
Fur seals										50,000
Frogs										4,325
Dogfish oil									30,000	1,400
Total	150,000	1,500	1,232,500	26,754	70,000	1,920	8,670,000	200,432	20,619,821	655,119

Table showing by counties and species the yield of the fisheries of Washington in 1891.

Species.	Okehalis.		Clallam.		Clarks.		Cowlitz.		Jefferson.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Bineback salmon					53,830	\$1,835	12,000	\$420		
Chinook salmon	80,000	\$1,500			35,500	1,275	82,500	3,300		
Cultus-cod			115,000	\$2,275					24,000	\$650
Dog salmon			55,140	1,060					13,000	260
Flounders			8,150	183						
Halibut			315,000	5,350					120,000	2,950
Herring			15,000	150					10,000	320
Humpback salmon			37,880	757						
Rockfish			100,000	2,775						
Silver salmon	130,000	3,150	103,080	3,163			53,400	1,668	23,500	965
Smelt					8,300	254	68,000	1,537		
Steelhead salmon							503,327	5,408		
Sturgeon			2,400							
Whale			14,947							
Fur seals										
Total	190,000	4,650	750,150	33,040	96,630	3,384	719,827	11,793	218,500	5,775

Species.	King.		Klickitat.		Mason.		Pacific.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Bineback salmon			147,773	\$3,529			251,750	\$5,034
Chinook salmon	144,083	\$3,530	73,818	2,061			3,603,300	130,559
Cultus-cod	12,000	300						
Dog salmon	861,472	6,832						
Flounders	70,000	1,400						
Halibut	207,000	6,480						
Herring	102,000	1,530						
Humpback salmon	618,416	9,388						
Perch	60,000	1,500						
Shad			17,229	48,830	1,620		42,180	2,531
Silver salmon	821,081	17,229					443,000	4,730
Smelt	75,000	1,875						
Steelhead salmon	200,220	4,187	78,314	2,046			464,700	6,537
Crabs	57,000	2,400						
Clams	270,000	2,350						
Oysters					1,500,000	\$30,000	7,830,480	105,206
Fur seals		45,682						
Frogs	8,413	3,365						
Total	3,629,365	107,789	348,865	8,647	1,500,000	98,000	12,065,419	280,507

Species.	Pierce.		San Juan.		Skagit.		Skamania.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Black cod	13,500	\$405						
Bineback salmon								
Chinook salmon	56,612	1,696					171,875	5,181
Cod, salted								
Cultus-cod	132,000	3,640						
Dog salmon	91,439	914						
Flounders	115,000	1,735						
Halibut	352,500	8,840						
Herring	175,000	1,750	200,000	\$2,000				
Humpback salmon	95,645	1,912						
Rockfish	50,000	1,500						
Shad	1,012	57						
Silver salmon	354,304	7,136						
Smelt	175,000	2,825						
Steelhead salmon								
Trout, black-spotted	18,000	3,600						
Trout, salmon	12,000	360						
Crabs	1,800	450						
Shrimp	400,000	3,600						
Clams	430,000	7,875						
Oysters								
Fur seals								
Dogfish oil	33,750	1,575						
Total	2,582,362	48,772	200,000	2,000	25,000	13,000	337,810	10,000

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Table showing by counties and species the yield of the fisheries of Washington in 1891—
Continued.

Species.	Thurston.		Wahkiakum.		Whatcom.		Total.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Black cod.....							12,569	\$405
Blueback salmon.....			28,820	\$1,165	522,760	\$11,202	1,145,669	26,794
Chinook salmon.....			5,466,975	265,019			9,723,673	254,123
Cod, salted.....							85,000	1,400
Cultus cod.....							253,000	5,335
Dog salmon.....							1,021,051	9,098
Flounders.....							180,150	3,285
Halibut.....							964,500	23,030
Herring.....							506,000	5,750
Humpback salmon.....							753,941	11,937
Perch.....							60,000	1,500
Rockfish.....							150,000	4,275
Shad.....			16,766	1,002			56,900	3,580
Silver salmon.....					103,125	1,100	2,193,330	98,552
Smelt.....							272,000	5,180
Steelhead salmon.....			428,170	7,768			1,325,438	24,379
Sturgeon.....							548,537	5,468
Trout, black-spotted.....							16,000	2,880
Trout, salmon.....							16,000	540
Crabs.....							69,000	2,780
Shrimp.....							1,800	450
Clams.....							790,800	6,140
Oysters.....	115,200	\$2,880					9,965,680	154,981
Whales.....								2,400
Fur seals.....								70,179
Frogs.....							8,413	3,985
Dogfish oil.....							53,750	1,575
Total.....	115,200	2,880	5,977,673	213,954	625,985	12,302	30,154,986	777,232

Table showing by counties and species the yield of the fisheries of Washington in 1892.

Species.	Chehalis.		Clallam.		Clatsop.		Cowlitz.		Jefferson.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Blueback salmon.....					182,560	\$4,875	15,000	\$450		
Chinook salmon.....	298,728	\$7,043			95,825	3,245	110,000	4,400		
Cultus cod.....			118,000	\$2,545					95,000	\$1,590
Dog salmon.....	222,000	1,610	95,000	1,805					4,000	80
Flounders.....			12,400	243						
Halibut.....			236,000	6,135					355,000	6,950
Herring.....			25,000	250					12,000	340
Rockfish.....			123,000	3,315						
Silver salmon.....	751,477	13,397	152,310	4,315			37,000	582	11,000	470
Smelt.....									23,000	600
Steelhead salmon.....					35,400	973	49,400	903		
Sturgeon.....	38,000	190					565,623	5,507		
Whales.....										
Fur seals.....									19,337	
Total.....	1,510,215	22,240	684,400	26,150	293,725	8,062	707,623	11,823	501,000	10,090

Species.	King.		Klickitat.		Mason.		Pacific.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Blueback salmon.....			319,962	\$5,306			843,975	\$18,970
Chinook salmon.....	145,284	\$4,136	144,855	4,149			3,458,775	104,118
Cod, salted.....	175,000	7,000						
Cultus cod.....	16,000	380						
Dog salmon.....	1,916,220	13,942					263,000	1,015
Flounders.....	73,100	1,443						
Halibut.....	248,000	10,150						
Herring.....	105,113	1,577						
Perch.....	95,140	1,363						
Shad.....								
Silver salmon.....	1,268,614	22,651	73,054	1,983			750,000	7,560
Smelt.....	96,726	2,406						
Steelhead salmon.....	261,143	5,232	280,870	4,965			790,130	11,924
Crabs.....	60,000	2,500					9,000	750
Oysters.....					1,076,800	\$22,850	7,588,440	101,179
Clams.....	300,000	3,500						
Fur seals.....								
Frogs.....	12,125	5,250						
Total.....	4,844,628	177,683	518,781	19,071	1,997,800	32,860	13,800,720	379,368

Table showing by counties and species the yield of Washington fisheries in 1892—Cont'd.

Species.	Pierce.		San Juan.		Skagit.		Skamania.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Black-cod	15,000	\$450						
Buckback salmon							432,280	\$12,988
Chinook salmon	140,400	4,212					257,400	7,723
Cod, salted					304,000	\$14,500		
Cultus-cod	122,000	2,550						
Dog salmon	165,800	1,050						
Flounders	100,000	1,500						
Hallibut	348,000	5,800						
Herring	235,000	2,350	250,000	\$2,500				
Rockfish	40,000	1,200						
Shad	1,100	55						
Silver salmon	322,340	7,905						
Smelt	200,000	2,000						
Steelhead salmon							329,190	8,421
Trout, black-spotted	20,000	3,000						
Trout, salmon	20,000	600						
Crabs	10,000	200						
Shrimp	2,000	500						
Oysters	520,200	11,216						
Clams	284,000	2,200						
Fur seals						3,780		
Dogfish oil	37,500	1,750						
Total	2,022,420	51,908	250,000	2,500	304,000	13,240	1,072,870	29,151

Species.	Thurston.		Wahkiakum.		Whatcom.		Total.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Black-cod							15,000	\$450
Buckback salmon							2,513,802	82,431
Chinook salmon			5,124,250	192,290	374,225	\$6,870	9,548,627	262,282
Cod, salted							320,000	21,500
Cultus-cod							350,000	6,875
Dog salmon					605,925	3,450	3,310,115	22,190
Flounders							184,500	3,191
Hallibut					500	15	1,410,500	29,140
Herring							617,112	6,817
Perch							65,140	1,303
Rockfish							100,000	4,515
Shad			20,250	1,250			100,250	3,183
Silver salmon					103,050	1,740	3,597,345	60,143
Smelt							321,728	6,156
Steelhead salmon			619,000	11,064			2,419,192	43,419
Sturgeon							543,625	5,757
Trout, black-spotted							20,000	3,000
Trout, salmon							70,000	3,350
Crabs							2,000	500
Shrimp							70,000	3,350
Oysters	122,000	\$2,750					9,805,440	147,995
Clams							684,000	5,700
Whales								600
Fur seals								121,528
Frogs							13,125	5,250
Dogfish oil							37,500	1,750
Total	122,000	2,750	6,143,100	216,024	1,044,000	11,060	36,767,287	631,608

Table showing by counties, species, and apparatus of capture the yield of vessel fisheries of Washington in 1889, 1890, 1891, and 1892.

Year.	Counties.	Species.	Lines.		Seine and gill nets.		Guns and spears.		Total.	
			Lbs.	Value.	Lbs.	Value.	No.	Value.	Lbs.	Value.
1889..	Jefferson	Cultus-cod	5,000	\$100					5,000	\$100
		Dog salmon			4,000	\$80			4,000	80
		Hallibut	20,000	600					20,000	600
		Silver salmon			8,000	280			8,000	280
		Total	25,000	780	12,000	360			37,000	1,080
1890..	King	Cod, salted	80,000	2,800					80,000	2,800
		Cultus-cod	8,000	180					8,000	180
		Hallibut	220,000	9,000					220,000	9,000
		Fur seals					2,875	\$50,190		50,190
		Total	408,000	12,800			2,875	50,190	408,000	42,750
		Grand total.	433,000	13,200	12,000	360	2,875	50,190	448,000	43,610

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Table showing by counties, species, and apparatus of capture the yield of vessel fisheries of Washington in 1889, 1890, 1891, and 1892—Continued.

Year.	Counties.	Species.	Lines.		Seines and gill nets.		Guns and spears.		Total.	
			Lbs.	Value.	Lbs.	Value.	No.	Value.	Lbs.	Value.
1890	Jefferson	Cultus-cod	7,000	\$140					7,000	\$140
		Dog salmon			6,000	\$120			6,000	120
		Halibut	30,000	900					30,000	900
		Silver salmon			8,000	320			8,000	320
		Total	37,000	1,040	15,000	450			52,000	1,490
1890	King	Cultus-cod	11,000	220					11,000	220
		Halibut	177,000	5,310					177,000	5,310
		Fur seals					4,820	\$58,908		\$58,908
		Total	188,000	5,530			4,820	\$58,908	188,000	\$58,908
		Grand total	431,700	13,001	15,000	450	4,820	\$58,908	444,700	71,357
1890	Pierce	Black-cod	4,700	141					4,700	141
		Cultus-cod	2,000	40					2,000	40
		Halibut	300,000	5,250					300,000	5,250
		Total	306,700	5,431					306,700	5,431
		Grand total	431,700	13,001	15,000	450	4,820	\$58,908	444,700	71,357
1891	Jefferson	Fur seals					815	14,947		14,947
		Cultus-cod	10,000	200					10,000	200
		Dog salmon			13,000	260			13,000	260
		Halibut	60,000	1,750					60,000	1,750
		Silver salmon			17,000	680			17,000	680
1891	King	Total	70,000	1,950	30,000	900			100,000	2,850
		Cultus-cod	12,000	240					12,000	240
		Halibut	207,000	6,480					207,000	6,480
		Fur seals					2,852	45,632		45,632
		Total	219,000	6,720			2,852	45,632	219,000	\$2,412
1891	Pierce	Black-cod	13,500	405					13,500	405
		Cultus-cod	2,000	40					2,000	40
		Halibut	348,000	8,735					348,000	8,735
		Total	364,500	9,180					364,500	9,180
		Grand total	738,500	21,810	30,000	900	4,307	70,179	768,500	\$2,389
1892	Clallam	Cultus-cod	2,000	40					2,000	40
		Dog salmon			2,000	40			2,000	40
		Halibut	5,000	150					5,000	150
		Silver salmon			*3,000	110			3,000	110
		Fur seals					1,743	16,537		16,537
1892	Jefferson	Total	7,000	140	5,000	150	1,743	16,537	12,000	16,827
		Cultus-cod	50,000	750					50,000	750
		Dog salmon			4,000	80			4,000	80
		Halibut	205,000	5,150					205,000	5,150
		Silver salmon			6,000	220			6,000	220
1892	King	Total	224,000	5,880	10,000	300			234,000	6,180
		Cod, salted	175,000	7,000					175,000	7,000
		Cultus-cod	16,000	320					16,000	320
		Halibut	348,000	10,150					348,000	10,150
		Fur seals					6,800	98,511		98,511
1892	Pierce	Total	539,000	17,530			6,800	98,511	539,000	116,041
		Black-cod	15,000	450					15,000	450
		Cultus-cod	3,000	60					3,000	60
		Halibut	345,000	5,800					345,000	5,800
		Total	363,000	6,310					363,000	6,310
1892	Skagit	Cod, salted	364,000	14,560					364,000	14,560
		Fur seals					270	3,780		3,780
		Total	364,000	14,560			270	3,780	364,000	18,340
		Grand total	1,597,500	44,425	16,000	450	8,843	118,828	1,612,500	186,713
		Whatcom	500	15					500	15

* Caught with gill net.

Tables showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1889.

Counties and species.	Gill nets.		Pound nets and trap nets.		Seines.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Chehalis:								
Chinook salmon	1,085,075	\$21,701						
Silver salmon	662,750	16,556	619,450	\$15,486				
Total	1,747,825	38,257	619,450	15,486				
Clallam:								
Cultus-cod							130,000	\$2,500
Dog salmon							47,210	935
Halibut							300,000	4,500
Humpback salmon							39,350	810
Rockfish							60,000	1,650
Silver salmon							88,440	2,095
Total							663,000	13,120
Clark:								
Blueback salmon	47,000	1,500						
Chinook salmon	20,000	800						
Steelhead salmon	6,000	175						
Total	73,000	2,475						
Cowlitz:								
Blueback salmon	13,000	390						
Chinook salmon	81,000	2,340						
Silver salmon	28,675	667						
Steelhead salmon	43,335	1,143						
Sturgeon							218,985	2,300
Total	165,000	5,440					218,985	2,300
Jefferson:								
Cultus-cod							19,000	600
Halibut							41,000	520
Herring					15,000	\$300		
Silver salmon					25,000	750		
Smelt					40,000	1,050	60,000	1,620
Total								
King:								
Chinook salmon	35,861	984	17,273	327	27,114	517		
Dog salmon	158,347	1,453	12,115	61	121,785	871		
Flounders					25,000	800		
Herring	28,520	394			8,750	131		
Humpback salmon	29,255	439	17,212	257	137,980	2,068		
Perch					23,000	490		
Silver salmon	208,583	4,240	375,830	4,021	502,547	5,652		
Smelt					33,000	825		
Steelhead salmon	57,600	1,152	11,530	230	21,450	439		
Crabs					14,400	600		
Total	512,896	8,701	423,950	4,806	915,006	12,053		
Klickitat:								
Blueback salmon	15,000	600	14,000	560				
Chinook salmon	8,500	340	5,000	200				
Steelhead salmon	2,000	60	1,000	30				
Total	25,500	1,000	20,000	790				
Pacific:								
Blueback salmon	90	4	106,995	5,344	4,765	228		
Chinook salmon	608,200	20,323	890,575	49,523	34,173	1,700		
Shad			14,125	1,412				
Silver salmon	399,330	9,083	708,670	19,947				
Steelhead salmon	1,120	23	221,100	6,634	29,240	877		
Total	1,008,740	30,353	2,131,525	62,665	68,153	2,624		
Pierce:								
Chinook salmon			2,500	105	12,480	375		
Cultus-cod							108,000	2,100
Dog salmon			21,405	214	51,405	815		
Flounders					80,000	1,200		
Halibut							4,000	120
Herring					165,000	1,650		
Humpback salmon			22,125	443	78,480	1,598		
Rockfish							62,000	1,200
Shad			500	20	500	25		
Silver salmon			71,820	1,558	214,215	4,092		
Smelt					145,000	2,175		
Trout, black-spotted							12,000	1,800
Trout, salmon							300	
Crabs					8,000	340		
Shrimp					1,500	300		
Total			118,850	2,360	708,660	12,100	162,000	8,280

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Tables showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1889—Continued.

Counties and species.	Gill nets.		Pound nets and trap nets.		Seines.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Skanania:								
Blueback salmon.....	11,000	\$350						
Chinook salmon.....	2,000	150						
Steelhead salmon.....	1,000	80						
Total.....	15,000	730						
Wahkiakum:								
Blueback salmon.....					7,400	\$973		
Chinook salmon.....	5,440,350	206,000	69,375	\$3,400	1,500,375	73,018		
Shad.....			5,075	567	10	1		
Steelhead salmon.....	132,500	3,977	10,470	314	410,540	12,316		
Total.....	5,572,850	370,007	85,720	4,370	1,978,385	90,706		
All counties:								
Blueback salmon.....	85,000	3,044	120,905	5,804	12,225	611		
Chinook salmon.....	7,281,900	314,177	1,085,723	53,029	1,634,147	80,619		
Cultus-ood.....							254,000	\$5,100
Dog salmon.....	155,847	1,483	33,520	375	173,250	1,366	47,310	905
Flounders.....					105,000	1,700		
Halibut.....							345,000	5,440
Herring.....	30,250	394			188,750	2,081		
Humpback salmon.....	39,355	439	30,337	700	314,450	3,065	30,350	810
Perch.....					25,000	460		
Rockfish.....							105,000	2,910
Shad.....								
Silver salmon.....	1,597,938	31,487	30,800	2,020	510	26		
Smelt.....			1,965,270	41,033	718,782	10,344	92,440	2,905
Steelhead salmon.....	242,625	6,570	244,150	7,308	461,230	13,022		
Sturgeon.....							218,000	2,300
Trout black-spotted.....							12,000	1,800
Trout, salmon.....					12,000	300		
Crabs.....					22,400	840		
Shrimp.....					1,500	300		
Grand total.....	9,118,601	307,664	2,499,486	110,777	3,771,224	119,795	1,110,985	22,320
Counties and species.	Wheels.		Minor nets.		Tongs and hose.		Spears, guns, etc.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Clallam:								
Whales.....								\$800
Clatsop:								
Blueback salmon.....	4,750	\$127						
Chinook salmon.....	10,500	510						
Steelhead salmon.....	2,930	85						
Total.....	17,670	635						
Knap:								
Frogs.....			7,500	\$3,000				
Clams.....					100,000	\$900		
Total.....			7,500	3,000	100,000	900		
Klickitat:								
Blueback salmon.....	100,307	4,130	40,500	605				
Chinook salmon.....	65,435	2,417	34,000	510				
Silver salmon.....	10,700	500	22,225	333				
Steelhead salmon.....	7,670	230						
Total.....	183,332	7,486	96,725	1,451				
Mason:								
Oysters.....					1,500,000	\$7,500		
Pacific:								
Oysters.....					5,000,400	\$1,604		
Pierce:								
Clams.....					200,000	3,750		
Oysters.....					300,000	7,500		
Dogfish oil.....							20,500	1,300
Total.....					600,000	10,250	20,500	1,300

Tables showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1889—Continued.

Counties and species.	Wheels.		Minor nets.		Tongs and hoses.		Spears, guns, etc.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Skamania:								
Blueback salmon	123,315	\$4,369						
Chinook salmon	94,375	3,951						
Steelhead salmon	4,019	180						
Total	222,000	8,904						
Thurston:								
Oysters					78,000	\$1,800		
All counties:								
Blueback salmon	230,323	9,390	48,500	\$608				
Chinook salmon	171,960	6,978	34,000	510				
Silver salmon	16,780	543	23,225	333				
Steelhead salmon	14,000	484						
Frogs			7,500	3,000				
Clams					438,000	2,450		
Oysters					7,547,400	123,004		
Dogfish oil							28,500	\$1,320
Whales								800
Grand total	433,002	17,225	104,285	4,451	7,985,400	153,254	28,500	2,120

Table showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1890.

Counties and species.	Gill nets.		Pound and trap nets.		Seines.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Chehalis:								
Chinook salmon	75,000	\$1,875						
Silver salmon	150,000	3,750						
Total	225,000	5,625						
Clallam:								
Cultus-cod							120,000	\$2,350
Halibut							280,000	4,200
Rockfish							65,000	1,725
Dog salmon							63,800	1,275
Silver salmon							96,200	3,000
Total							625,000	12,550
Clarke:								
Blueback salmon	55,920	1,730						
Chinook salmon	34,000	1,020						
Steelhead salmon	8,000	60						
Total	125,920	2,810						
Cowlitz:								
Blueback salmon	20,000	700						
Chinook salmon	137,000	5,480						
Silver salmon	37,150	743						
Steelhead salmon	70,850	1,717						
Sturgeon							255,263	2,971
Total	265,000	8,640					255,263	2,971
Jefferson:								
Cultus-cod							21,000	570
Halibut							50,000	1,000
Herring					17,000	\$340		
Silver salmon							7,000	350
Smelt					20,000	800		
Total					37,000	940	78,000	1,920
King:								
Chinook salmon	54,270	1,654			37,833	1,639		
Dog salmon	350,481	3,185			265,004	2,741		
Flounders					45,000	800		
Herring	83,500	780			15,500	300		
Perch					44,000	800		
Silver salmon	311,314	7,435			408,488	6,538		
Smelt					60,000	1,600		
Steelhead salmon	107,787	2,150			64,873	1,208		
Crabs					38,400	1,400		
Total	878,252	15,184			1,120,598	16,902		

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Table showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1890—Continued.

Counties and species.	Gill nets.		Pound and trap nets.		Seines.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Klickitat:								
Blueback salmon	11,450	\$220	12,000	\$240				
Chinook salmon	8,000	240	5,000	150				
Steelhead salmon	4,000	50	3,000	30				
Total	24,080	530	20,000	420				
Pacific:								
Blueback salmon	85	2	198,485	3,060	14,045	\$290		
Chinook salmon	268,825	8,005	1,778,850	58,300	74,500	2,237		
Shad			26,115	2,000				
Steelhead salmon	1,316	18	411,120	4,110				
Total	268,220	8,020	2,414,280	62,529	88,445	2,526		
Pierce:								
Chinook salmon			7,500	225	30,800	927	115,000	\$2,300
Cultus-cod								
Dog salmon			27,761	277	75,727	757		
Flounders					85,000	1,275	3,000	90
Halibut								
Herring					170,000	1,700	45,000	1,350
Rockfish								
Shad			8,725	696	512	30		
Silver salmon			97,400	2,168	260,725	5,646		
Smelt					150,000	2,250	15,000	2,700
Trout, black-spotted								
Trout, salmon					15,000	450		
Crabs					10,000	300		
Shrimp					1,475	295		
Total			141,286	2,968	799,238	13,626	178,000	6,440
San Juan:								
Herring					150,000	1,500		
Skamania:								
Blueback salmon	10,000	200						
Chinook salmon	4,000	120						
Steelhead salmon	6,000	60						
Total	20,000	380						
Wahkiakum:								
Blueback salmon	1,105	22	1,515	20	56,515	1,126		
Chinook salmon	4,914,850	151,302	90,725	2,721	1,269,225	20,165		
Shad			8,725	696	80	7		
Steelhead salmon	138,440	1,384	29,790	298	367,010	2,069		
Total	5,056,395	152,708	120,735	2,747	1,692,830	42,967		
All counties:								
Blueback salmon	128,590	2,584	212,000	4,239	71,480	1,425		
Chinook salmon	5,497,945	169,068	1,881,875	58,456	1,412,138	42,359	284,000	5,220
Cultus-cod							63,800	1,275
Dog salmon	850,481	8,168	27,761	277	470,721	3,498	333,000	5,290
Flounders								
Halibut	82,800	786			354,500	3,802		
Herring					44,000	880	116,000	3,675
Perch								
Rockfish								
Shad			43,575	3,486	592	35	103,200	3,350
Silver salmon	498,944	11,019	97,400	2,168	609,208	12,172		
Smelt					234,000	4,500		
Steelhead salmon	334,967	5,440	442,910	4,428	431,628	4,962	255,200	2,671
Sturgeon							15,000	2,700
Trout, black-spotted					15,000	450		
Trout, salmon					45,400	1,900		
Crabs					1,475	295		
Shrimp								
Grand total	6,882,867	192,687	2,706,521	71,064	3,890,187	79,531	1,136,200	23,761

PACIFIC COAST FISHERIES.

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Table showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1890—Continued.

Counties and species.	Wheels.		Minor nets.		Tongs and boes.		Spears, guns, etc.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Clallam: Whales.....								\$900
Clarke:								
Blueback salmon.....	66,250	\$1,325						
Chinook salmon.....	41,200	1,239						
Steelhead salmon.....	18,680	187						
Total.....	126,230	2,751						
King:								
Frogs.....			10,813	\$4,325				
Clams.....					204,000	\$1,700		
Total.....			10,813	4,325	204,000	1,700		
Klickitat:								
Blueback salmon.....	295,470	8,864	38,585	579				
Chinook salmon.....	143,242	4,300	54,088	841				
Silver salmon.....	10,500	210	31,500	472				
Steelhead salmon.....	98,250	1,443	14,025	210				
Total.....	545,562	14,817	140,178	2,102				
Mason:								
Oysters.....					1,524,000	38,100		
Pacific:								
Oysters.....					6,898,200	100,500		
Pierce:								
Clams.....					430,000	3,500		
Oysters.....					890,000	7,313		
Dogfish oil.....							30,000	1,400
Total.....					1,320,000	10,813	30,000	1,400
Skamania:								
Blueback salmon.....	674,745	20,242						
Chinook salmon.....	514,875	15,440						
Steelhead salmon.....	23,080	692						
Total.....	1,212,500	36,374						
Thurston:								
Oysters.....					78,800	1,920		
All counties:								
Blueback salmon.....	1,096,465	30,421	38,585	579				
Chinook salmon.....	690,317	20,979	54,088	841				
Silver salmon.....	10,500	210	31,500	472				
Steelhead salmon.....	138,010	2,322	14,025	210				
Frogs.....			10,813	4,325				
Clams.....					1,324,000	10,813		
Oysters.....					8,898,200	107,500		
Dogfish oil.....							30,000	1,400
Whales.....								\$900
Grand total.....	1,894,292	53,942	150,601	6,427	9,512,000	153,130	30,000	2,000

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Table showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1891.

Counties and species.	Gill nets.		Pound and trap nets.		Seine.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Chehalis:								
Chinook salmon	60,000	\$1,500						
Silver salmon	130,000	3,150						
Total	190,000	4,650						
Clallam:								
Cultus-cod					8,150	\$163	115,000	\$2,375
Flounders							315,000	5,350
Halibut					15,000	150		
Herring					8,370	125	46,770	935
Dog salmon							37,800	757
Humpback salmon							100,000	2,775
Rockfish					21,630	475	82,350	2,400
Silver salmon								
Total					53,150	913	607,000	14,700
Clatsop:								
Blueback salmon	42,000	1,050						
Chinook salmon	21,000	540						
Steelhead salmon	6,000	125						
Total	74,000	2,645						
Cowlitz:								
Blueback salmon	12,000	420						
Chinook salmon	82,500	3,300						
Silver salmon	53,400	1,068						
Steelhead salmon	60,000	1,537					503,327	5,468
Sturgeon								
Total	216,500	6,325					503,327	5,468
Jefferson:								
Cultus-cod							14,000	420
Halibut							80,000	1,200
Herring	16,000	320					6,500	125
Silver salmon	22,000	550						
Smelt								
Total	58,000	990					80,500	1,945
King:								
Chinook salmon	75,500	2,055			76,483	1,475		
Dog salmon	411,190	3,067			450,273	2,105		
Flounders					70,000	1,400		
Herring	76,500	1,148			23,500	383		
Humpback salmon	154,854	2,322			464,562	6,968		
Perch					60,000	1,500		
Silver salmon	367,511	8,948			548,570	6,772		
Smelt					70,000	1,675		
Steelhead salmon	190,825	2,617			78,485	1,570		
Crabs					57,600	2,400		
Total	1,236,460	20,757			1,605,483	29,005		
Klickitat:								
Blueback salmon	11,400	342	12,000	\$360				
Chinook salmon	4,000	120	3,000	90				
Steelhead salmon	5,100	153	5,000	150				
Total	20,500	615	20,000	600				
Pacific:								
Blueback salmon	105	3	248,640	4,076	2,905	56		
Chinook salmon	1,222,675	41,310	2,337,600	93,501	43,625	1,745		
Shad			42,180	2,531				
Silver salmon	137,690	1,377	305,240	3,353				
Steelhead salmon	27,075	406	432,304	6,051	5,330	80		
Total	1,386,915	43,065	3,368,364	110,415	51,760	1,861		

Table showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1891—Continued.

Counties and species.	Gill nets.		Pound and trap nets.		Seines.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Pierce:								
Chinook salmon			19,012	\$570	37,000	\$1,128		
Cultus cod							180,000	\$2,000
Dog salmon			26,500	265	84,938	648		
Flounders					115,000	1,735		
Halibut							8,500	108
Herring					175,000	1,750		
Humpback salmon			25,416	508	70,339	1,404		
Rockfish							50,000	1,500
Shad			612	37	400	30		
Silver salmon			95,900	1,916	261,004	5,220		
Smelt					175,000	2,625		
Trout, black-spotted.							16,000	2,800
Trout, salmon					18,000	540		
Crabs					15,000	360		
Shrimp					1,600	450		
Total			166,840	3,296	990,973	15,871	190,500	7,065
San Juan:								
Herring					300,000	2,000		
Skamania:								
Blueback salmon	4,835	\$145						
Chinook salmon	2,500	100						
Steelhead salmon	4,000	60						
Total	11,335	305						
Wahkiakum:								
Blueback salmon					38,830	1,165		
Chinook salmon	4,379,900	166,166	42,800	1,712	1,171,275	33,139		
Shad			12,306	732	4,560	270		
Steelhead salmon	146,640	2,190	12,170	183	260,260	5,267		
Total	4,426,540	168,367	67,176	2,626	1,462,955	41,961		
Whatcom:								
Blueback salmon			512,260	10,977				
Silver salmon	14,625	156			72,750	776		
Total	14,625	156	512,260	10,977	72,750	776		
All counties:								
Blueback salmon	76,340	2,589	773,100	16,913	41,625	1,221		
Chinook salmon	5,747,555	215,393	2,402,412	95,876	1,332,983	39,487		
Cultus cod							250,000	5,250
Dog salmon	411,190	3,667	26,500	265	523,582	3,969	48,770	935
Flounders					193,150	3,288		
Halibut							878,500	6,055
Herring	92,500	1,468			415,500	4,262		
Humpback salmon	154,854	3,532	25,416	508	534,791	9,570	37,680	797
Perch					60,000	1,500		
Rockfish							150,000	4,275
Shad			55,000	3,300	4,000	250		
Silver salmon	723,196	14,609	400,640	5,269	868,954	14,743	83,850	3,013
Smelt	22,000	600			250,000	4,500		
Steelhead salmon	387,240	7,007	446,474	6,283	553,185	7,037		
Sturgeon							503,327	5,408
Trout, black-spotted.							16,000	2,800
Trout, salmon					18,000	540		
Crabs					60,000	2,700		
Shrimp					1,600	450		
Grand total	7,614,684	247,695	4,132,542	127,914	4,668,070	92,407	1,460,327	29,276

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Table showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1891—Continued.

Counties and species.	Wheals.		Minor nets.		Tongs and hoas.		Spears, guns, etc.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Clallam:								
Whales.....								\$2,400
Clarke:								
Blueback salmon.....	5,820	\$175						
Chinook salmon.....	14,500	435						
Steelhead salmon.....	4,300	129						
Total.....	24,620	739						
King:								
Frogs.....			2,413	\$3,305				
Clams.....					270,000	\$2,250		
Total.....			2,413	3,305	270,000	2,250		
Klickitat:								
Blueback salmon.....	22,455	1,064	60,918	914				
Chinook salmon.....	54,685	1,750	16,183	151				
Silver salmon.....	19,110	573	29,620	447				
Steelhead salmon.....	48,050	1,441	30,164	302				
Total.....	139,299	5,619	121,065	1,814				
Mason:								
Oysters.....					1,500,000	30,000		
Pacific:								
Oysters.....					7,000,480	105,268		
Pierce:								
Clams.....					400,000	2,800		
Oysters.....					430,000	7,875		
Dogfish oil.....							33,750	1,575
Total.....					830,000	11,785	33,750	1,575
Skamania:								
Blueback salmon.....	114,000	2,422						
Chinook salmon.....	108,975	2,081						
Steelhead salmon.....	62,010	1,800						
Total.....	244,975	10,304						
Thurston:								
Oysters.....					115,200	2,580		
Whatcom:								
Blueback salmon.....			10,500	22				
Silver salmon.....			15,750	168				
Total.....			26,250	290				
All counties:								
Blueback salmon.....	123,375	5,502	71,418	1,139				
Chinook salmon.....	240,540	7,218	10,183	151				
Silver salmon.....	19,110	573	45,570	615				
Steelhead salmon.....	115,260	3,466	20,164	302				
Frogs.....			2,413	3,305				
Clams.....					700,000	5,140		
Oysters.....					9,905,680	154,981		
Dogfish oil.....							33,750	1,575
Whales.....								2,400
Grand total.....	556,385	16,751	155,748	5,572	10,722,480	161,101	33,750	3,975

Table showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1892.

Counties and species.	Gill nets.		Pound nets and trap nets.		Seine.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Chelan:								
Chinook salmon.....	299,654	\$5,323	99,654	\$1,790				
Dog salmon.....	219,593	1,000	193,140	511				
Silver salmon.....	549,608	10,048	187,989	2,349				
Sturgeon.....			36,000	190				
Total.....	1,082,522	16,430	427,693	5,610				
Clallam:								
Cultus cod.....					12,400	\$248	117,000	\$2,305
Flounders.....							354,000	6,005
Halibut.....					25,000	250		
Herring.....					17,000	335	74,000	1,440
Dog salmon.....							123,000	3,315
Rockfish.....					38,310	895	111,000	2,210
Silver salmon.....								
Total.....					83,400	1,718	779,000	16,305
Clarke:								
Blueback salmon.....	68,000	2,040						
Chinook salmon.....	27,000	1,080						
Steelhead salmon.....	6,000	90						
Total.....	101,000	3,210						
Cowlitz:								
Blueback salmon.....	15,000	450						
Chinook salmon.....	110,000	4,400						
Silver salmon.....	27,000	532						
Steelhead salmon.....	49,400	983					505,623	5,567
Sturgeon.....								
Total.....	202,000	6,305					505,623	5,567
Jefferson:								
Cultus cod.....							27,000	860
Halibut.....							90,000	1,800
Herring.....					12,000	240		
Silver salmon.....					23,000	460	5,000	250
Smelt.....								
Total.....					35,000	700	122,000	2,910
King:								
Chinook salmon.....	69,917	2,640	32,018	983	42,449	1,134		
Dog salmon.....	643,110	4,760	164,790	1,640	1,106,320	4,142		
Flounders.....					73,180	1,443		
Herring.....	78,634	1,153			26,273	394		
Perch.....					45,140	1,303		
Silver salmon.....	467,923	9,585	128,230	3,847	692,452	9,219		
Smelt.....					98,726	2,488		
Steelhead salmon.....	130,570	2,611	62,323	1,348	63,250	1,385		
Crabs.....					60,000	2,600		
Total.....	1,370,363	20,190	387,360	7,665	2,334,775	25,968		
Klickitat:								
Blueback salmon.....	12,000	360	14,000	280				
Chinook salmon.....	3,000	90	2,000	80				
Silver salmon.....	5,000	150						
Steelhead salmon.....	5,000	150	4,000	80				
Total.....	25,000	750	20,000	430				
Pacific:								
Blueback salmon.....	105	3	264,885	18,697	8,985	270		
Chinook salmon.....	1,697,175	43,287	2,294,200	90,772	95,200	1,929		
Dog salmon.....	67,686	338	125,334	677				
Shad.....			63,400	1,872				
Silver salmon.....	252,000	2,530	504,000	5,040				
Steelhead salmon.....	8,710	148	765,080	11,480	14,440	289		
Crabs.....	9,000	750						
Total.....	1,435,654	47,144	4,066,066	128,547	88,725	2,519		

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Table showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1892—Continued.

Counties and species.	Gill nets.		Pound nets and trap nets.		Seine.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Pierce:								
Chinook salmon			48,600	\$1,452	91,800	\$2,754	125,000	\$2,500
Cutthroat					110,000	1,100		
Dog salmon			55,280	553	100,000	1,500		
Flounders							3,000	90
Halibut					225,000	2,250		
Herring							40,000	1,200
Rockfish								
Shad			500	25	900	30		
Silver salmon			165,560	3,911	227,780	4,555		
Smelt					200,000	3,000		
Trout, black-spotted							20,000	3,000
Trout, salmon					20,000	600		
Crabs					10,000	200		
Shrimp					2,000	500		
Total			269,940	5,347	987,790	18,505	188,000	7,300
San Juan:								
Herring					250,000	2,500		
Skamania:								
Blueback salmon	15,000	\$450						
Chinook salmon	4,000	100						
Steelhead salmon	5,000	75						
Total	24,000	625						
Wahkiakum:								
Blueback salmon					300,000	10,000		
Chinook salmon	4,490,500	174,550	500	30	634,250	18,728		
Shad			17,850	536	22,000	720		
Steelhead salmon	283,570	4,254	1,500	150	333,900	6,600		
Total	4,783,070	178,804	19,850	706	1,346,240	37,114		
Whatcom:								
Blueback salmon			200,225	5,578				
Dog salmon	83,475	477			500,850	2,882		
Silver salmon	21,000	224			127,050	1,365		
Total	104,475	701	200,225	5,578	628,900	4,227		
All counties:								
Blueback salmon	110,105	3,303	1,200,110	24,553	374,965	11,256		
Chinook salmon	6,106,646	230,960	2,477,102	95,052	824,790	24,575		
Cutthroat							279,000	5,025
Dog salmon	1,014,111	6,604	457,544	3,381	1,787,480	18,435	74,000	1,440
Flounders					184,500	3,181		
Herring	78,634	1,183			538,278	5,634		
Halibut							447,000	7,925
Perch					65,140	1,305		
Rockfish							160,000	4,515
Shad			80,750	2,433	22,000	750		
Silver salmon	1,317,140	23,070	985,650	15,547	1,080,492	18,084	116,000	3,480
Smelt					321,726	6,156		
Steelhead salmon	480,250	8,169	823,802	12,945	416,680	8,334		
Sturgeon			38,000	190			505,000	5,567
Trout, black-spotted							20,000	3,000
Trout, salmon					20,000	600		
Crabs	9,000	750			70,000	2,800		
Shrimp					2,000	500		
Grand total	9,128,989	273,188	6,061,967	154,101	5,064,730	91,570	1,604,623	32,172

PACIFIC COAST FISHERIES.

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Table showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1892—Continued.

Counties and species.	Wheels.		Minor nets.		Tongs and hoes.		Spears, guns, etc.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Clallam:								
Whales.....								9000
Fur-seal pelts.....								2,700
Total.....								3,600
Clarke:								
Blueback salmon.....	94,500	\$3,325						
Chinook salmon.....	38,325	1,145						
Steelhead salmon.....	29,400	882						
Total.....	162,225	4,862						
King:								
Clams.....					300,000	\$2,500		
Frogs.....			13,125	\$5,250				
Total.....			13,125	5,250	300,000	2,500		
Klickitat:								
Blueback salmon.....	217,052	6,512	78,900	1,154				
Chinook salmon.....	125,405	3,782	14,450	217				
Silver salmon.....	34,104	1,023	33,950	510				
Steelhead salmon.....	242,970	4,289	29,900	434				
Total.....	619,531	15,598	154,200	2,315				
Mason:								
Oysters.....					1,576,800	22,850		
Pacific:								
Oysters.....					7,528,440	101,179		
Pierce:								
Clams.....					334,000	3,900		
Oysters.....					508,200	11,216		
Dogfish oil.....							37,500	1,750
Total.....					842,200	14,416	37,500	1,750
Skamania:								
Blueback salmon.....	417,290	12,518						
Chinook salmon.....	253,400	7,602						
Steelhead salmon.....	378,190	6,346						
Total.....	1,048,870	26,466						
Thurston:								
Oysters.....					132,000	2,750		
Whatcom:								
Blueback salmon.....			14,000	300				
Dog salmon.....			21,000	120				
Silver salmon.....			15,000	100				
Total.....			50,000	520				
All counties:								
Blueback salmon.....	725,832	21,965	90,900	1,454				
Chinook salmon.....	417,050	12,529	14,450	217				
Dog salmon.....			21,000	120				
Silver salmon.....	34,104	1,023	48,950	670				
Steelhead salmon.....	660,560	13,517	29,900	434				
Frogs.....			13,125	5,250				
Clams.....					834,000	9,700		
Oysters.....					9,055,440	147,965		
Dogfish oil.....							37,500	1,750
Whales.....								9000
Fur-seal pelts.....								2,700
Grand total.....	1,831,126	48,934	217,325	8,145	10,579,440	153,085	37,500	5,060

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Table showing by counties and species the yield of the shore fisheries of Washington—Continued.

SUMMARY.

Counties and species.	1899.		1900.		1901.		1902.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Chehalis:								
Chinook salmon.....	1,085,075	\$21,791	75,000	\$1,075	60,000	\$1,500	398,738	\$7,043
Dog salmon.....							322,000	1,610
Silver salmon.....	1,283,200	32,044	150,000	3,750	130,000	3,150	751,477	13,397
Sturgeon.....							38,000	180
Total.....	2,368,275	53,745	325,000	5,075	190,000	4,650	1,510,215	22,240
Clallam:								
Culms-cod.....	130,000	2,500	120,000	2,350	115,000	2,275	117,000	2,305
Flounders.....	300,000	4,500	300,000	4,500	315,000	5,250	354,000	6,035
Halibut.....					15,000	150	25,000	350
Herring.....	47,210	965	63,600	1,275	55,140	1,000	91,000	1,785
Dog salmon.....	39,350	810			37,000	737		
Humpback salmon.....	60,000	1,050	65,000	1,225	100,000	2,775	123,000	3,315
Rockfish.....	94,440	2,005	94,200	2,000	103,900	2,183	149,310	4,105
Silver salmon.....								
Whales.....		800		600		2,400		600
Fur-seal pelts.....								2,790
Total.....	661,000	13,925	625,000	13,150	750,150	16,003	872,400	21,323
Clatsop:								
Bineback salmon.....	51,750	1,737	192,170	3,055	53,630	1,855	182,500	4,875
Chinook salmon.....	30,290	1,310	75,200	2,256	35,500	2,275	65,825	2,345
Steelhead salmon.....	8,920	263	24,620	247	9,300	254	35,400	972
Total.....	90,970	3,310	292,150	5,561	98,430	3,384	263,725	8,092
Cowlitz:								
Bineback salmon.....	13,000	390	28,000	790	12,000	420	15,000	450
Chinook salmon.....	31,000	3,240	137,000	5,480	82,500	3,300	119,000	4,460
Silver salmon.....	36,875	987	27,150	743	58,400	1,960	27,000	552
Steelhead salmon.....	42,325	1,143	70,850	1,717	68,000	1,537	49,400	983
Sturgeon.....	218,965	2,300	256,263	2,671	503,237	5,468	565,623	5,567
Total.....	381,965	7,740	520,263	11,911	719,637	11,760	767,623	11,932
Jefferson:								
Culms-cod.....	18,000	500	21,000	570	14,000	420	37,000	890
Halibut.....	41,000	820	50,000	1,000	60,000	1,200	90,000	1,800
Herring.....	15,000	300	17,000	340	16,000	320	12,000	240
Silver salmon.....	4,000	200	7,000	250	6,500	325	5,000	250
Smelt.....	25,000	750	20,000	600	25,000	600	23,000	600
Total.....	103,000	2,670	115,000	2,660	115,500	2,925	167,000	3,840
King:								
Chinook salmon.....	80,248	1,828	93,790	2,408	146,063	3,530	145,384	4,136
Dog salmon.....	286,247	2,415	745,485	5,808	801,472	6,932	1,916,220	12,562
Flounders.....	25,000	500	40,000	800	70,000	1,400	72,100	1,443
Herring.....	35,000	525	70,000	1,050	102,000	1,530	105,112	1,577
Humpback salmon.....	184,427	2,764			619,416	8,268		
Perch.....	22,000	460	44,000	880	68,000	1,560	65,140	1,323
Silver salmon.....	1,048,960	13,922	719,700	13,962	931,081	17,220	1,268,614	23,951
Smelt.....	3,000	825	46,000	1,050	75,000	1,875	98,728	2,466
Steelhead salmon.....	90,570	1,811	172,400	3,449	298,230	4,187	261,143	5,222
Crabs.....	14,400	600	38,400	1,080	57,600	2,400	60,000	2,500
Frogs.....	7,500	3,000	10,812	4,325	8,413	3,265	13,125	5,250
Clams.....	106,000	900	204,000	1,700	270,000	2,250	306,000	2,500
Total.....	1,977,352	29,555	2,213,661	38,171	3,410,365	55,377	4,365,623	61,612
Klickitat:								
Bineback salmon.....	172,817	5,898	337,535	9,913	147,772	3,520	319,932	8,306
Chinook salmon.....	112,925	2,967	212,410	5,531	73,645	2,061	144,655	4,149
Silver salmon.....	30,065	836	42,600	982	48,930	1,620	73,054	1,984
Steelhead salmon.....	10,870	236	117,875	1,723	78,214	2,468	280,870	4,933
Total.....	326,617	10,727	720,820	17,850	348,665	8,647	618,731	19,071
Mason:								
Oysters.....	1,500,000	27,500	1,524,000	38,100	1,500,000	36,000	1,576,800	32,850
Pacific:								
Bineback salmon.....	111,080	5,506	213,515	4,270	251,750	5,034	943,975	18,970
Chinook salmon.....	1,632,063	71,580	2,119,975	63,603	3,609,300	136,350	3,458,775	136,118
Dog salmon.....							200,000	1,015
Shad.....	14,125	1,412	36,125	2,080	42,186	2,531	62,400	1,872
Silver salmon.....	1,196,000	29,950			443,000	4,730	756,000	7,580
Steelhead salmon.....	251,530	7,544	413,430	4,123	664,709	6,587	730,130	11,921
Crabs.....	5,000	800					3,000	750
Oysters.....	5,000	800	8,000	200	7,000	105	7,800	101
Total.....	8,617,648	197,865	9,679,245	174,683	12,695,419	360,507	13,809,730	278,386

Table showing by counties and species the yield of the shore fisheries of Washington—Continued.

SUMMARY—Continued.

Counties and species.	1880.		1890.		1891.		1892.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Pierce:								
Chinook salmon	15,000	\$450	20,300	\$1,153	54,613	\$1,008	140,400	\$4,312
Cultus cod	100,000	2,100	115,000	2,300	134,000	2,800	125,000	2,500
Dog salmon	72,970	720	105,488	1,034	91,429	914	165,000	1,650
Flounders	80,000	1,300	85,000	1,275	115,000	1,725	100,000	1,500
Halibut	4,000	120	3,000	90	5,500	165	1,000	30
Herring	165,000	1,650	170,000	1,700	175,000	1,750	225,000	2,250
Humpback salmon	56,615	2,041			85,945	1,913		
Rockfish	42,000	1,200	45,000	1,350	50,000	1,500	40,000	1,200
Shad	1,000	55	8,237	724	1,012	57	1,100	55
Silver salmon	287,535	6,250	354,132	7,814	354,304	7,136	300,840	7,008
Smelt	145,000	2,175	150,000	2,250	175,000	2,625	200,000	3,000
Trout, black-spotted	13,000	1,800	15,000	2,700	16,000	2,880	30,000	5,400
Trout, salmon	13,000	390	15,000	450	16,000	540	20,000	600
Crabs	8,000	240	10,000	300	12,000	360	10,000	300
Shrimp	1,500	300	1,475	295	1,400	280	500	100
Clams	200,000	2,750	425,000	5,900	440,000	6,160	300,000	4,200
Oysters	300,000	7,500	300,000	7,500	430,000	10,750	500,000	12,500
Dogfish oil	20,000	1,200	30,000	1,800	32,750	1,935	37,000	2,220
Total	1,778,000	32,370	1,958,712	35,640	2,217,082	38,582	2,408,430	45,488
San Juan:								
Herring			150,000	1,500	200,000	2,000	250,000	2,500
Skamania:								
Blueback salmon	123,315	5,443	604,745	26,442	118,925	2,048	422,200	12,666
Chinook salmon	90,275	4,081	518,675	15,540	171,675	8,181	257,400	7,722
Steelhead salmon	5,010	150	20,000	752	67,010	1,950	362,190	8,421
Total	218,600	9,674	1,142,420	32,934	357,610	10,099	1,072,870	23,111
Thurston:								
Oysters	75,000	1,800	75,000	1,950	115,200	2,880	122,000	3,050
Wahkiakum:								
Blueback salmon	7,460	373	59,135	1,178	28,620	1,105	300,000	10,000
Chinook salmon	7,070,100	348,117	8,270,000	102,188	5,490,975	300,019	5,124,250	130,250
Shad	5,585	588	8,005	705	18,708	1,002	30,000	1,250
Steelhead salmon	552,900	10,007	535,240	5,251	420,170	7,700	619,000	11,000
Total	7,637,035	365,063	8,870,080	108,222	5,977,673	212,964	6,140,100	216,024
Whatcom:								
Blueback salmon					522,700	11,902	274,225	5,878
Dog salmon					103,125	3,100	162,000	1,740
Silver salmon								
Total					625,825	15,002	1,042,500	11,000
All counties:								
Blueback salmon	490,192	19,437	1,487,100	30,558	1,145,856	26,764	2,513,982	62,431
Chinook salmon	10,297,750	455,913	9,547,343	291,333	9,723,873	354,123	9,843,227	300,300
Cultus cod	254,000	5,100	254,000	5,230	250,000	5,295	270,000	5,000
Dog salmon	490,327	4,100	912,773	8,296	1,060,081	9,906	2,304,115	22,070
Flounders	165,000	1,700	134,000	2,255	182,150	2,800	184,500	2,181
Halibut	845,000	5,440	825,000	8,200	378,500	9,965	447,000	7,925
Herring	215,000	2,475	467,000	4,590	560,000	9,750	617,112	6,417
Humpback salmon	322,302	8,615			722,941	11,957		
Perch	20,000	600	44,000	880	80,000	1,500	60,140	1,300
Rockfish	103,000	2,910	110,000	3,075	180,000	4,275	100,000	4,515
Shad	21,010	2,055	44,107	3,519	50,900	3,580	100,250	2,182
Silver salmon	4,012,815	88,064	1,410,173	30,291	2,176,220	28,912	3,800,245	80,613
Smelt	203,000	2,750	230,000	4,500	272,000	5,180	331,750	6,180
Steelhead salmon	942,805	27,804	1,982,615	17,872	1,322,433	24,370	2,419,120	43,418
Trout	218,000	2,900	255,263	2,971	565,257	5,466	548,023	5,797
Trout, black-spotted	12,000	1,800	15,000	2,700	18,000	2,880	30,000	5,400
Trout, salmon	13,000	390	15,000	450	16,000	540	20,000	600
Trout, steelhead								
Crabs	7,500	2,250	10,813	4,235	8,413	2,545	13,125	3,250
Clams	430,000	5,800	604,000	8,300	708,000	9,708	604,000	8,300
Oysters	22,400	560	48,400	1,210	60,000	1,500	70,000	1,750
Shrimp	1,500	300	1,475	295	1,400	280	500	100
Oysters	7,547,400	128,004	8,800,000	147,000	9,900,000	154,941	9,800,460	147,000
Whales								
Dogfish oil	20,000	1,200	30,000	1,800	32,750	1,935	37,000	2,220
Grand total	25,002,502	700,518	26,173,121	563,793	29,500,100	684,000	26,144,797	707,000

Table showing by counties the extent of the salmon-canning industry of Washington in 1899, 1890, 1891, and 1892.

Counties and years.	No. of employes. (a)	Canneries.		Salmon utilized in canning.														
		No.	Value.	Cash capital.	Chinook.		Blueback.		Steelhead.		Silver.		Dog.		Humpback.		Total.	
					Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Chelan:																		
1899.	189	3	\$44,000	\$45,000	860,000	\$19,500												
1890.	56	1	8,000	30,000	202,500	4,387												
1891.																		
1892.																		
King:																		
1899.	120	2	32,500	40,000	26,726	274												
1890.	48	1	15,000	20,000	4,308	60												
1891.	77	1	7,000	35,000	41,000	399												
1892.	73	1	7,000	35,000	11,000	108												
Pacific:																		
1899.	278	4	80,000	104,000	1,466,725	63,026	111,215	\$2,224	368,220	\$6,680	1,006,000	26,650						
1890.	183	2	55,000	81,000	2,060,075	75,242	204,020	4,092	517,060	5,179								
1891.	226	4	140,500	141,000	3,243,075	123,877	264,415	5,280	464,030	6,060	824,500	6,752						
1892.	206	4	141,500	103,000	3,296,700	131,096	460,135	9,203	1,018,200	15,273	766,000	7,500	300,000	3,015				
Whatkum:																		
1899.	350	7	184,500	328,000	7,114,648	350,241	7,460	373	653,600	12,383								
1890.	244	7	182,050	250,000	6,812,388	260,539	68,115	1,178	577,240	5,771								
1891.	328	7	177,500	307,000	5,585,143	216,585	38,850	778	478,170	7,686								
1892.	342	7	182,350	322,000	5,184,252	201,700	618,045	11,464	769,580	7,686								
Whatcom:																		
1899.	72	1	25,000	30,000			525,760	11,202			103,125	1,100						
1890.	82	1	30,000	40,000			574,225	9,876			169,850	1,749	608,325	3,450				
1891.																		
1892.																		
Total:																		
1899.	953	16	\$21,000	\$28,000	9,480,702	432,101	118,675	2,597	948,810	22,308	3,252,544	67,258	139,531	623	272,194	4,081	14,212,456	520,991
1890.	612	10	252,050	331,000	8,408,631	246,111	248,715	2,270	1,085,220	10,653	2,320,450	23,000	139,281	1,403	618,410	9,281	11,045,098	365,279
1891.	773	13	298,750	413,000	8,271,913	346,201	828,965	17,268	242,700	3,146	1,405,992	11,691	339,281	1,613	618,410	9,281	13,904,077	484,279
1892.	651	13	340,750	520,000	8,794,540	339,081	1,205,426	26,543	1,807,620	23,160	2,304,450	24,352	2,300,000	12,084			16,440,570	424,206

^a Included in the figures for Pacific County are 100 persons in 1890, 40 in 1891, and 45 in 1892 who were employed in salmon canning at Shoalwater (Willapa) Bay after the close of the season on the Columbia River. They have been credited to the Columbia River in the regular statistics of persons employed.

Table showing by counties the extent of the salmon-canning industry of Washington in 1882, 1890, 1899, 1900, 1901, and 1902—Continued.

Counties and years.		Cases of salmon packed.												Total.		
		Chinook.			Blueback.		Steelhead.		Silver.		Dog.		Humpback.			
		No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.	
Chehalis:																
1882	1890	13,240	\$66,560					16,316	\$72,055					31,556	\$138,615	
1899	1900	4,500	20,250					7,700	30,800					16,800	67,100	
King:																
1882	1890	226	1,335					30,129	12,111					30,129	12,111	
1899	1900	83	332					15,400	12,000					15,400	12,000	
1901	1902	517	2,068					4,418	27,053					4,418	27,053	
Pacific:																
1882	1890	117	230					7,656	27,053					21,236	70,280	
Wahkiakum:																
1882	1890	22,478	105,228					16,400	64,000					44,000	137,248	
1899	1900	22,155	147,522					8,900	20,650					43,272	131,132	
1901	1902	49,000	270,322					10,800	43,200					67,023	340,165	
Whatcom:																
1882	1890	49,000	274,725											86,995	425,978	
Total:																
1882	1890	108,853	621,740											117,042	655,985	
1899	1900	107,935	616,841											115,129	634,115	
1901	1902	78,000	485,819											91,784	515,239	
Whatcom:																
1882	1890													99,827	546,227	
Total:																
1882	1890													9,000	25,425	
1899	1900													15,000	35,945	
1901	1902															
Total:																
1882	1890	145,222	794,943					44,000	174,108					311,023	1,050,790	
1899	1900	189,273	764,495					15,400	12,000					161,431	874,784	
1901	1902	184,211	784,319					28,411	115,000					198,097	951,099	
Total:																
1882	1890	128,235	784,319					28,411	115,000					259,745	1,166,000	

PACIFIC COUNTY.

This county is favorably located in respect to its fishing resources. One-half of its southern border is at the mouth of the Columbia River. Here are located over 300 pound nets used in the salmon fishery, many of which are owned in the county. Here, also, a large part of the salmon catch of the river is taken and distributed among the salmon canneries on both sides of the river. Here, at certain seasons, sardines, herring, shad, and other varieties not now utilized hold out inducements for the extension of the fisheries.

Just outside of the mouth of the Columbia, and off the shores of Pacific County, are good fishing-grounds on which may be found in more or less abundance, at all seasons of the year, rockfish, flounders, perch, halibut, and numerous other varieties of good food-fish, to all of which only slight attention is given.

At the northern end of the county Willapa Harbor is a good haven for shelter, and leading from it is Willapa Bay, formerly known as Shoalwater Bay, which is noted for its extensive beds of native oysters, as well as the abundance of salmon occurring during the fall.

The fisheries of Willapa Bay are confined to the salmon and oyster business, in addition to which a small quantity of crabs taken in the salmon nets are utilized.

The run of salmon was fair in 1889, light in 1890 and 1891, and the largest in many years in 1892. The fish in 1892 were also of larger size and better quality than the average of past years. Three canneries are located on the bay, but only one of them was packing during 1892. The low price of canned salmon and the light run in 1890 and 1891 were so discouraging to the canners that two of the canneries did not resume in 1892, and the only one packing was ill prepared for the large run, and was obliged to shut down in the height of the season, owing to lack of cans in which to pack. The first salmon to enter this bay are the chinooks, locally known as black salmon; they run from the last of July to the last of August, with some stragglers later. Silver salmon appear about the middle of August and drop off in September, to be followed by dog salmon and another run of silver salmon during the last of September or early in October. A few steelheads are found in November, but only a light run of them occurs before December, after which they are to be found more or less abundantly all winter.

The salmon catch is chiefly by pound nets, of which twelve were located on North River and three on Willapa River, near their entrance to the bay. As showing the abundance of salmon in 1892, the catch of 1,700 salmon, of which 1,460 were silver salmon, at one lift of a single pound net may be recorded. Pound nets are put down in August, previous to which time the fishing in Willapa Bay is of small extent and for local use.

The prices paid the salmon fishermen during 1892 were 10 cents each for silver salmon, 25 cents each for chinook salmon, and 5 cents each for

dog salmon. During 1892 no arrangements had been made for salting the catch of salmon, and preparations for canning were based on the expectation of only a light run, as in the two previous years. At the date of closing, thousands of salmon were taken from the pound nets only to be refused at the cannery and then thrown away from want of salt and barrels in which to cure or tins in which to pack them; the fishing was consequently discontinued.

During December, 1892, the railroad reached Willapa Bay, its terminal being at South Bend on the Willapa River. The first house in South Bend is reported to have been built in 1889; in 1892 the town had a population of 2,000. With the advent of the railroad a cold-storage company was organized to engage extensively in the fresh-fish trade. Should the plans of the company be realized it would be of great advantage to the fishermen and would provide an outlet for any such abundance of salmon as was witnessed in 1892.

The growth of the salmon fishery of Willapa Bay from 1890 to 1892 was phenomenal. In 1890 the only salmon taken were for local use. In 1891 30,000 pounds of silver salmon were shipped fresh, in addition to the local consumption. In 1892 10,800 cases of silver salmon and 2,900 cases of dog salmon were canned, and 75,000 pounds of fresh chinook salmon were sent to market, the total catch of the 45 salmon fishermen being 1,034,000 pounds, valued at \$10,075.

The oyster industry of Willapa Bay has its principal headquarters at Bay Center, though the business is important at Oysterville. In 1892 365 persons were employed, including 143 Indians; \$47,735 was invested, and the value of the output was \$101,179. Next to San Francisco Bay, the oyster industry of Willapa Bay is more important than elsewhere on the Pacific Coast.

Since the oyster beds in Willapa Bay were visited by the writer in 1889 they had suffered severe loss from numerous storms; at times the shoal waters of the bay would sweep the oysters from the beds, leaving them in rows, buried in the mud and grass of the bottom. Thousands of bushels of oysters were thus killed. With the increased care of the beds, the replanting of the small oysters and of shells, the great losses by storms have been overcome, and the quantity of oysters taken for market has been kept up to the average of late years. For years the business was carried on with little or no regard to the future interest of the beds, the chief and only aim of the fishermen seemingly being to take all the oysters possible during the time permitted, without cultivating or caring for the beds in any way. The decline in the native beds called attention to the necessity for preserving them from complete depletion, and measures were taken by the State with that end in view.

During the open season before cold weather the native oysters are gathered by hand at low tide, the beds being entirely exposed, and only the market oysters being taken. With the return of the tide the oystermen work from boats with tongs, and the catch under such circumstances is culled, all small oysters and old shells being returned to

the water. During the prevalence of cold weather rakes and shovels take the place of hand-picking at low tide, and the oysters are culled, as is done with those taken by means of tongs.

The oysters gathered at Bay Center are mostly marketed at San Francisco; those taken at Oysterville go to Portland, Oreg.

The quantity and value of the oyster output of the bay in 1889, 1890, 1891, and 1892 were as follows:

Location.	1889.		1890.		1891.		1892.	
	Bushels.	Value.	Bushels.	Value.	Bushels.	Value.	Bushels.	Value.
Bay Center	80,490	\$70,429	100,720	\$88,130	118,268	\$94,614	114,256	\$91,400
Oysterville	12,000	11,375	14,250	12,468	13,240	10,502	12,224	9,779
Total	92,490	\$81,804	114,970	100,598	131,508	105,206	126,474	101,179

CHEHALIS COUNTY.

The fisheries of this county are located on the Chehalis River, mostly near its mouth, and in Grays Harbor. In addition to the commercial fishing which is there carried on, considerable quantities of fish are also taken by Indians belonging on the Quinault Reservation, who fish in the river of the same name for local consumption. Fishing in the Chehalis River is done by means of gill nets and pound nets, the only fish utilized being salmon and sturgeon. Ocean food-fish in great abundance and variety are found just outside the harbor. These, together with the salmon, sturgeon, trout, and other fish found in the river and bay, will doubtless lead to a marked development of the fisheries of this county within a short time.

During 1889 three canneries were located on the Chehalis River whose aggregate pack was 31,550 cases. The very large output of canned salmon in that year on the west coast resulted in such low prices that many canneries were kept idle during the next two years, among which were the three canneries on this river. The only fishing carried on during 1890 and 1891 was a limited amount of gill-net salmon fishing in the Chehalis, and the Indian fishing already alluded to.

In December, 1891, a branch of the Pacific Railroad was opened to Ocosta, near the entrance to Grays Harbor. The facilities for shipment thus furnished and the opening of a cannery the following year revived the business that for two years had been almost abandoned. A cold-storage company was organized which contemplated entering largely into the fresh-fish business and shipping to Atlantic cities by means of refrigerator cars. During the fall of 1892 the run of the several varieties of salmon was very good. Chinooks, locally known as black salmon, entered the river in limited numbers as early as August 10, and by the 15th they were quite abundant; their average weight was 24 pounds. Silver salmon were found from the last of September to the first of November, averaging 12 pounds in weight. There was a short run of dog salmon from October 10 to November 1, these fish

having an average weight of 12 pounds. There was also a small run of dog salmon in the river after November 1. Steelheads are found from November to the following March, but the closing of the canneries before the run begins had, prior to building the railroad, prevented their utilization. The prices received by the salmon fishermen in 1892 were 30 cents each for chinooks, 15 cents each for silver salmon, and 5 cents each for dog salmon. In 1892 there were 102 fishermen employed in the salmon fishery of the Chehalis River, 34 of whom came from the Columbia River after the close of the season on that stream. Of the capital employed, amounting to \$52,285, \$7,300 represented nets, boats, etc., brought from the Columbia. Fifty-eight Chinamen were employed as cannery hands. The aggregate catch of salmon on the Chehalis in 1892 was 1,472,215 pounds, with a value to the fishermen of \$22,050. This quantity included salmon canned, used locally, and shipped fresh by express. During the years 1889 and 1892, when salmon canning was done on this river, the following quantities of the different kinds of salmon were packed:

Species.	1889.	1892.
	Cases.	Cases.
Chinooks.....	13, 240	4, 500
Silver.....	18, 310	7, 700
Dog.....		4, 000
Total.....	31, 550	16, 200

Sturgeon have always been more or less abundant in the Chehalis River, but up to a recent date no value was attached to them, and those found in the pound nets were knocked in the head and thrown away. Direct rail communication soon brought buyers from Puget Sound, and no more sturgeon were discarded. In 1892 38,000 pounds of sturgeon incidentally taken in the pound nets were disposed of; the price received by the fishermen being one-half cent a pound gross weight.

A few fine shad are taken in the pound nets of Chehalis River, but no special fishing for shad is done at any time. No nets of any kind are used until the fall run of salmon begins, by which time the run of shad is probably nearly over. The few shad taken are eaten by the fishermen. Salmon trout are found plentifully in the Chehalis River, but are fished for only by sportsmen.

JEFFERSON COUNTY.

The fishing business of this county centers at Port Townsend. The many advantages which this point possesses for the carrying on of an extensive fishing industry have often been mentioned. The city has one of the best harbors on the Pacific coast. Many varieties of desirable food-fish are to be found almost at the city's docks. The halibut, cod, and other fish, which are found in abundance just within and outside the Strait of San Juan de Fuca, are much nearer to Port Townsend than to any other city or important shipping point. The fisheries have not reached that stage of development which was anticipated a few

years ago, chiefly for the reason that the attempts to utilize the fine resources of the region have not been sufficiently extensive and enough capital has not been put into the business to demonstrate the success of the industry. The great depression in all kinds of business during the past few years had its effects here as elsewhere and prevented the introduction of new enterprises or the enlargement of those already in existence. There is little reason to doubt that in the near future the fishing business of this county will be of great importance. A number of small-sized sailboats using hand lines for cultus-cod and halibut furnish the city with an abundance of food-fish, the surplus catch being sent to the various ports on Puget Sound. This, at present, constitutes the extent of the fishing industry of the county, with the exception of a small amount of seine fishing for herring and smelt. The western end of this county, which borders on the Pacific Ocean, is mountainous and unsettled, and maintains no fisheries.

CLALLAM COUNTY.

On the west this county abuts on the Pacific Ocean, while its northern border extends the entire length of the Strait of Fuca. It is therefore conveniently located with reference to the fishing-grounds, and it maintains fisheries of great and growing importance. The chief fishing centers are Neah Bay, Port Angeles, and Dungeness.

The fishery resources of this county are varied and valuable. The western section is mountainous and sparsely settled, and the fishing is confined to the taking of salmon by the Indians living along the banks of the Quillainte River, which flows through their reservation. Small quantities of halibut and cod, with an occasional whale, are also taken by these Indians, who depend chiefly on these products for their winter supply of food. During the early spring months, for several weeks, the fur seal is found resting and feeding off the shores of this county before proceeding on its migration to Bering Sea. In the fall immense numbers of salmon come in from the ocean on their way up the strait and sound. Herring, anchovies, and smelt are also found in large bodies. The fishing banks and shoals in the immediate vicinity of the north-western end of the county abound with fish, of which halibut, cultus-cod, rockfish, and black-cod are most sought after, while flounders, perch, dogfish, sharks, sculpins, and many other species are also abundant. The value of the fishery resources of this section has long been known, but up to the past few years the attempts made to utilize the resources have been limited.

In 1889 these fisheries were investigated for the United States Fish Commission by the writer, who again visited the region in 1892. In the interim the attention of the fishermen had been especially directed to this section by the printed reports distributed by the Commission, and as a result the fishermen largely extended their operations in that vicinity, marketing their catch at the various cities on the strait and sound, whence the surplus was shipped to the interior.

Neah Bay.—The most important of the fishing communities of this county is Neah Bay, located on a reservation of the Makah Indians. Its nearness to the fishing-grounds makes it important as a harbor of refuge for fishermen of this entire region. In 1892 the Indians of Neah Bay numbered 442. They are industrious, self-supporting, quiet, and peaceable. The only work performed by them is connected with the fisheries, with the exception that during the hop-picking season men, women, and children are engaged in the hopyards of the white settlers of distant counties on or near Puget Sound. As reported in 1889, these Indians continue to procure the larger part of their food supply from the fishing-grounds of the Strait of Fuca and the adjacent ocean. No records are kept of their catch, and the amounts credited in the tables are based on careful estimates made at the agency.

Halibut are the favorite food-fish of the Indians. It is estimated at the agency that 280,000 pounds of this fish are used annually as food, in addition to the quantities sold. During 1892 a fishing firm located at Tacoma had a steamer employed in visiting the grounds near Cape Flattery and buying the catch from the Indians and the small sailing vessels of white men. It is the practice of the Indians to go into camp near Cape Flattery, where the fish are dressed and disposed of, those not sold fresh being taken home and smoked for future use. The home market thus created induced a largely increased catch.

The average daily catch of a halibut canoe is about 40 fish, having an average weight of 30 pounds, many of the fish taken being much heavier. The fishing season is from the middle of May to the middle of August, after which time three-fourths of the Indians leave for the hop vineyards. The halibut continue to be taken by the Indians with large, cumbersome wooden hooks made by them, which they prefer to the regular trade hooks used by white men. Halibut have been found in their usual abundance on the several fishing-grounds inside and outside the Strait of Fuca, although the larger catch is taken in the ocean. In rough and stormy weather fishing can be successfully carried on inside the mouth of the strait.

In 1892 new grounds were resorted to with excellent results. These were located from 25 to 40 miles southwest from Cape Flattery, and fishing was done in a depth of 75 fathoms. The Indians of this county pay but little attention to salmon. Their catch is only made by trolling a bone or spoon hook in the American waters of the Strait of Fuca. The principal portion of the salmon run, which occurs in the fall, is said to be on the British side of the strait, on reaching the inner extremity of which the fish turn into their customary routes, one body going into Puget Sound and one going northward into the Strait of Georgia destined for the Fraser River.

The pursuit of the fur seal is an important branch of the fisheries carried on by the Indians of Neah Bay. Small sailing vessels making their headquarters at that point are employed, several of which are owned by the Indians. In addition to the five sailing vessels used, in

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1892 two others were bought and one was built in Seattle, too late for use during that year, all of which were to be put into this fishery in the following season.

Whales are pursued in large canoes that often go 15 or 20 miles from the shore. Only harpoons and lances are employed by the Indians in the whale fishery. After being killed, the whale is buoyed with large air bags made from the skins of sea lions and towed to the shore, where it is soon cut up and divided among the tribe. The blubber is cut into long, narrow strips and smoked for later use as one of their favorite articles of food.

The Indian, almost from infancy, is familiar with the canoe and its management. Very young children are often noticed dexterously manipulating the paddle in miniature canoes, and during youth the greater part of the life of the Indians is spent in their canoes. Strange to say, however, they do not feel safe on the deck of a vessel and seldom become good sailors. Even in the fur-seal fishery in which the Indians are the owners of the vessels employed, they never go any distance from land without having a white man aboard as navigator.

On returning from a fishing trip, the work of the Indian fisherman ceases until he again enters his canoe. The women meet the boats as soon as they land and attend to all the details connected with the care and preservation of the catch.

The canoes used by the Indians are all made of red cedar, each from a single log. Canoes of different sizes are employed in the different fisheries, the standards being about as follows:

Dimensions and crews of Indian canoes, Neah Bay.

Fisheries in which employed.	Length.	Beam.	Crew.
	<i>Feet.</i>	<i>Feet.</i>	
Salmon.....	10	2½ to 3	1 to 2
Halibut.....	30 to 33	5	4 to 6
Whale.....	35 to 40	5 to 7	6
Fur seal.....	22	2½	2

The quantities and values of the products taken by the Indians of Neah Bay when fishing in their canoes were as follows, the figures applying to each of the years 1889 to 1892, inclusive. In addition to the products shown, the Indians of the same tribe and county living on the Quillaiute River took 300 fur seals, valued at \$2,700, and a large amount of fish for local consumption of which no estimate can be given.

Species.	1889.		1890.		1891.		1892.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Halibut.....	300,000	\$4,500	230,000	\$4,200	290,000	\$4,350	325,000	\$4,875
Salmon.....	45,000	720	35,000	525	42,000	630	60,000	900
Cod (cultus and black).....	100,000	1,500	90,000	1,350	85,000	1,275	87,000	1,305
Rockfish.....	10,000	150	15,000	225	15,000	225	25,000	375
Whales.....number.....	(4)	800	(3)	600	(12)	2,400	(9)	600
Total.....	454,000	7,050	420,000	6,900	432,000	6,800	497,000	8,055

During 1889 and 1890 the sealing vessels of Neah Bay were seized for illegal sealing. In 1891 they took 815 seals, which were sold for \$14,947, and in the following year 1,743 seals were killed, which brought \$16,537. Three vessels were used in 1891 and five in 1892.

Port Angeles.—Prior to 1891 the fisheries of this port were confined to the operations of the Indians who live in the vicinity, but with the growth of the place during the years covered by this report more attention was given to developing the fishing business. A fishing and canning company under the name of the Port Angeles Packing Company was organized in 1892, a small cannery was built, and \$10,000 was invested in the plant. The business was started too late in the season to do more than prepare for the ensuing year.

Two small vessels and several boats were engaged in the line and gill-net fisheries of this place, the catch, consisting of cultus-cod, halibut, and salmon, being marketed at Port Townsend or Seattle, when not sold locally. Fish of numerous varieties are fairly abundant at most seasons of the year, and the port has one of the best harbors in this region. It would therefore appear that with the further growth of the country the fisheries will receive more attention. In 1891 and 1892 the following quantities of fish were taken by the fishermen of Port Angeles and the immediate vicinity, including some Indian fishermen of Elwha Creek, located 6 miles west of Port Angeles:

Species.	1891.		1892.	
	Pounds.	Value.	Pounds.	Value.
Salmon	30,000	\$800	44,000	\$875
Halibut	25,000	1,000	34,000	1,120
Rockfish	35,000	1,050	50,000	1,420
Total	90,000	2,850	128,000	3,315

Dungeness.—Dungeness is a settlement composed for the most part of Indians, with only a few white families. The section is rough and mountainous, the harbor is shallow, and the conditions do not appear favorable for a great increase in the fisheries. Some little fishing is carried on from canoes, with hooks and lines, by Clallam Indian men and women. Any surplus catch, which is seldom made, finds a market at Seattle. The quantity taken varies but little from year to year, and in 1892 was about as follows:

Species.	Pounds.	Value.
Salmon	125,000	\$2,750
Cultus cod and black-cod	30,000	1,000
Rockfish	50,000	1,500
Total	205,000	\$5,250

PIERCE COUNTY.

This county occupies the head of Puget Sound and has as its fishing center Tacoma, where most of the fishermen of the county reside and nearly all of the catch is marketed. With the recent growth of the city, the construction of a large cold-storage warehouse, and the investment of more capital in the industry, the outlook for the fisheries is very encouraging to the fishermen, and the results of the business present a considerable increase since the last report.

The principal fisheries are for salmon, carried on with pound nets; for cultus-cod, halibut, and rockfish, with lines; for flounders, herring, salmon, smelt, etc., with seines; and for oysters and clams, with tongs. The most important single products are oysters and silver salmon.

During 1892 a firm largely interested in the fisheries placed the steamer *Francis Cutting* in the business. This steamer was chiefly used as a transporter, making frequent trips from Tacoma to the several fishing banks of the sound and strait. The fishing season extended from May 1 to November 2, during which time about 500,000 pounds of halibut, 50,000 pounds of black-cod, and 75,000 pounds of cultus-cod were bought from the fishermen on the fishing-grounds, in addition to which the crew of the steamer caught about 20,000 pounds of halibut. On securing a fare the steamer returned to Tacoma, where the catch was placed in cold storage until needed. Fishing for halibut and the other fish is done by a small fleet of sailing vessels using hand lines.

Besides the halibut, black-cod, and cultus-cod brought in by the steamer, this firm handled considerable quantities of salmon, smelt, and sturgeon. After supplying the local demand, the surplus catch was packed in refrigerator cars and shipped to points east of the Rocky Mountains. The sturgeon handled came by rail from Grays Harbor the other fish were caught locally. This was probably the first year in which smelt were sent from the Pacific Coast to the East. The business of freezing and shipping fresh fish to eastern points promises a large increase in the near future. In 1891 one car, with 20,000 pounds of fresh fish, was sent east. In 1892, up to the middle of December, eleven cars, containing 297,369 pounds of fresh frozen fish, had been sent, while half a dozen car loads still remained in storage, to be forwarded later.

KING COUNTY.

The most important fishing center of this county is Seattle. The rapid growth in the population of Seattle, the building of a cold-storage warehouse, and the establishment of new fishing firms have led to a threefold increase in the fisheries of this county as compared with 1888.

The salmon canning business of Seattle and vicinity has fluctuated considerably in recent years. In 1889 three canneries were operated. During that season one was destroyed by fire, and the following year another shared the same fate, and the third was closed. The cannery destroyed in 1890 was burned during the packing season, but the business was continued in a hastily provided temporary building, the

packing for the season being necessarily much reduced, owing to the interruption. A large new cannery to replace the loss by fire was constructed, and was the only one in operation during the years 1891 and 1892. The most abundant salmon taken in this county is the dog salmon, which constitutes about five-twelfths of the catch. Silver salmon is next in abundance, representing one-third the catch, while steelhead and chinook salmon, respectively, comprise one-sixth and one-twelfth of the yield. In 1890 about three-eighths of the salmon catch of this county was obtained by means of pound nets, but in the later years the use of purse seines has been increasing and pound nets have been given up, so that in 1892 three-fourths of the catch was made with purse seines and one-fourth with gill nets.

A fleet of small-sized schooners, built for the fisheries during the years 1891 and 1892, at once inaugurated the halibut fishery, and their catch met with a ready sale at Seattle.

The business of shipping fish fresh in refrigerator cars is growing in importance. Shipments are as yet confined to fresh salmon and halibut consigned mostly to points east of the Missouri River. Each car carries from 12 to 18 tons of fish. In 1890 six carloads, comprising 195,250 pounds of fresh fish, were sent east from Seattle; the following year, nineteen carloads, aggregating 690,210 pounds, were sent east. Up to December 1, 1892, five carloads, equivalent to 121,550 pounds, had been sent, and it is probable that the shipments during the remainder of the year would make the aggregate for the season fully equal to that of 1891.

The Puget Sound and Alaska Commercial Company, of Seattle, was the pioneer of the cod-fishing business of that city. The firm began operations in February, 1892, and on March 5 of that year sent the schooner *Moonlight*, of 68 tons, with a crew of 17 men, on the first cod-fishing trip from Seattle. The vessel fished in Bering Sea and returned to Seattle on August 20 with 175,000 pounds of salt cod. Soon after being landed the fish were prepared in the usual manner as boneless cod and placed on the market. The success attending this first trip and the favorable reception accorded the prepared catch indicate that the future may see this business largely increased.

The pelagic fur-seal fishery has for many years received considerable attention in Seattle. Of late more vessels and larger craft have been engaged in this branch of the fisheries. During 1892 the vessels were very successful in taking seals and in receiving good prices in the London market, to which the entire catch was sent. At the close of 1892 vessels were being overhauled and made ready for an early start in January, 1893, for the distant sealing-grounds off the coast of Japan.

SKAGIT COUNTY.

This county is favorably located with reference to the fishing-grounds of the Strait of Fuca and Strait of Georgia, and will no doubt come into prominence with the further settlement of the section, but at the present time it maintains no local fisheries, and the only feature which

entitles it to mention is the offshore cod fishery carried on from Anacortes, in this county. During 1892 direct rail communication was established between Seattle and this county, with the water terminal at Anacortes. This town was one of many communities that the opening of the railroad brought into existence. Up to the date of the visit of the agent of the Fish Commission no attention had been given to the fisheries, with the exception of the cod fishery noted.

In 1891 Capt. J. A. Matteson, of Provincetown, Mass., brought to Anacortes the schooner *Lizzie Colby*, which had for a number of years been engaged in the Grand Banks cod fishery out of Provincetown. On the arrival of the vessel she was at once sent to the fishing banks in Bering Sea. Although the season was late when fishing began and the operations were continued only twenty days, 85,000 pounds of codfish were taken and brought to Anacortes. On March 17, 1892, this pioneer vessel in the cod fishery of Washington sailed from Anacortes on her second trip to Bristol Bay, Alaska, returning August 30 with 364,000 pounds of codfish, which were caught in three months' fishing. On the return of the vessel the cargo was stored under pickle in tanks until needed. As occasion requires, the fish are dried on outdoor flakes, and prepared for market as boneless codfish. The fish are sold in Seattle, Portland, and other cities of the west coast, and one car load was sent to Boston, Mass.

WHATCOM COUNTY.

This is the most northern county of the Pacific Coast of the United States. It lies at the southern entrance to the Gulf of Georgia and just northeast of the Strait of Fuca, and is of considerable importance in connection with the fisheries. Salmon on their way to the Fraser River pass the shores of this county, off which they are usually found about a month earlier than they are in the Fraser. The fisheries are centered at Point Roberts, a military reservation. Numerous varieties of fish are here found, but only salmon at the present time have any commercial importance. Previous to the establishment of a salmon cannery at Point Roberts in 1891, all the fishing of the county was confined to the period of the early run of salmon on their way to the Fraser. At that time the catch, of which no reliable report could be procured, was used locally, and sold to the canneries over the boundary line, on the Fraser River, and was much less than in 1891 and 1892.

During 1892 over three-fourths of the catch was taken by the 85 white men using purse seines and pound nets, and less than one-fourth by 100 Indian fishermen employing reef nets and gill nets. The reef net, of which a diagram and description were given in the previous report on the fisheries of this coast, is gradually going out of use, only 10 being used in 1892, against 20 in 1891. The proportional quantities of salmon taken with the different kinds of apparatus are as follows: Pound nets, two-tenths; purse seines, six-tenths; gill nets, one-tenth; reef nets, one-tenth. Silver salmon and skowitz or dog salmon are taken by purse seines and gill nets; sockeye or blueback salmon are

caught by pound nets, while all species are taken in small quantities in reef nets. The average gross weights of the different species of salmon taken at Point Roberts in 1892 were as follows: Blueback salmon, 7 pounds; silver salmon, 7½ pounds; dog salmon, 10½ pounds. The prices paid to the fishermen for these fish were 15 cents, 8 cents, and 6 cents, respectively.

The total quantity of salmon taken in 1891 was 625,885 pounds, and in 1892 1,043,500 pounds, all of which were caught and used in canning at Point Roberts.

SAN JUAN COUNTY.

This county consists of numerous islands lying midway between the island of Vancouver on the west and Skagit County on the east, in the direct line of migration of the large bodies of salmon on their way from the ocean to the Fraser River and other streams of the northwest coast. While the opportunities for commercial fishing for salmon and other fishes are regarded as extremely good, the fishing industry is insignificant. On Waldron Island some attention was given to the taking and smoking of herring during the years 1891 and 1892, several hundred thousand pounds of raw material being utilized annually. After being smoked the fish are packed in small boxes holding 5 or 6 pounds, and find a ready market in the cities of the Pacific Coast.

THE OYSTER BUSINESS OF PUGET SOUND.

Native oyster beds are abundant in Mason and Thurston counties, the beds in Mason County being in Oakland Bay, Case Inlet, Totten Inlet or Oyster Bay, and Hood Canal, and those of Thurston County in Mud Bay near Olympia; all of these bodies of water are tributary to Puget Sound. During the past few years more attention has been given to the native beds of this region. The small seed oysters obtained from the cull have been planted, and starfish found on the beds have been destroyed. In all cases in which some care has been bestowed on the beds a gain in the output has resulted, while localities where the beds have received no attention have generally shown a decrease, some beds worked as late as 1889 now being abandoned. In past years starfish have been very destructive to the native beds of Puget Sound; of late the efforts to rid the beds of this injurious animal have been increased, and depredations have been almost entirely prevented. The beds are exposed at low tide, at which time the starfish are gathered by hand and with forks, and used on the land for fertilizer.

In taking oysters in the Puget Sound region tongs are but little used—in some instances not at all, the oysters being picked by hand at low tide, and carried to floats, where they are culled, small seed oysters and shells being returned to the beds.

Market oysters are sent to Olympia, Tacoma, Seattle, and other points, in sacks containing 115 pounds, equivalent to 2 bushels. Prices in 1889 were \$3 per sack, and in 1891 and 1892 \$2.50 per sack. The oyster season is from September 1 to May 1. Two sacks per day are considered a fair quantity to be taken by one man.

Considerable interest is being taken in the question as to whether eastern oysters will propagate or thrive in the waters of Puget Sound. It is reported that the experiment will soon be given a trial by planting a consignment of oysters from the East.

The extent of the oyster industry of Puget Sound in the years 1889 to 1892, inclusive, is shown in the following tables. The number of men engaged and the capital invested in this industry show little change from year to year, although there has been a slight increase in the quantity of products, with a reduction in their value. In addition to the persons shown in the table, there were perhaps as many more employed at odd times in connection with the industry, but their operations were too brief to entitle them to mention in the tables. In addition to the quantities of oysters given for Mason and Thurston counties, about 10,000 bushels are taken annually from these counties by fishermen living at Tacoma, to which place their catch is credited.

In 1892 small beds of a bivalve mollusk (*Placunanomia macroschisma*) of no economic value were found between Tacoma and Seattle. Considerable attention was given to this discovery, because of the extensive notices in the press. By the newspapers the shellfish were almost invariably designated as valuable beds of eastern oysters. Their shells were about the size of a medium eastern oyster. The soft part of most of them was of a bright red color, resembling fresh meat rather than shellfish. The Indians of the sound have long been familiar with these mollusks, and report them as good for food at certain seasons and as poisonous at other times. No experiments as to their value for food were made by the whites, and the beds remain undisturbed.

Persons employed in the oyster industry of Puget Sound.

Counties and countries.	Nativity.	Nationality.
Mason:		
United States	40	45
United States (Indians)	11	11
China	8	8
France	5	5
Total	64	64
Thurston:		
United States (Indians)	12	12
Grand total	76	76

Boats, apparatus, shore property, and cash capital employed in the oyster industry of Puget Sound.

Items.	Mason.		Thurston.		Total.	
	No.	Value.	No.	Value.	No.	Value.
Boats	278	\$1,500	525	\$750	103	\$2,310
Tongs	43	172	10	40	53	212
Floats	40	2,000	5	250	45	2,250
Shore property		1,000				1,000
Cash capital		5,000				5,000
Total	161	9,732	40	1,040	201	10,772

a Rowboats.

b Canoes.

Product of the oyster industry of Puget Sound.

Years.	Macon.		Thurston.		Total.	
	Bushels.	Value.	Bushels.	Value.	Bushels.	Value.
1889.....	25,000	\$27,500	1,200	\$1,600	26,200	\$29,100
1890.....	25,400	28,100	1,200	1,920	26,600	40,020
1891.....	26,000	29,000	1,920	2,880	27,920	41,880
1892.....	26,200	22,850	2,200	2,750	28,400	25,600

ALASKA.

GROWTH OF THE FISHING INDUSTRY.

Until a few years ago the wonderful fishery resources of Alaska were little known except to the natives of the country. Attention was called to this distant portion of the United States by Dr. Tarleton H. Bean, of the United States Fish Commission, in the report of the Commission for 1880. This report was extensively copied and was read with great interest, and its accounts of the wonderful abundance of salmon and other fish were by many received with doubts similar to those entertained two hundred and fifty years before regarding the reports carried to Europe as to the abundance of fish off the New England coast. Time has proved that the statements of Dr. Bean were quite moderate and fully reliable. Notwithstanding the great abundance of fish in Alaskan waters, the total value of the fish utilized in 1880 by others than natives was shown to have been insignificant.

Soon after attention had been called to Alaska and its resources by the United States Fish Commission, many persons engaged in the salmon business on the Columbia and other coast rivers gave the subject of Alaskan fisheries careful consideration. Although the fish were very abundant, the great distance of the grounds and the expense necessary to establish a plant there were considered to involve too great a risk to warrant the inauguration of fisheries. The first experiment having proven a financial success, the doubtful watchers, slowly at first and later with more eagerness, followed, until at the present time it will be seen that over half of the aggregate pack of salmon in the United States and nearly half of the pack of the entire world comes from Alaska.

The large area, and the wide distances between inhabited stations of this vast domain, render the gathering of complete general and statistical information a matter of much time, difficulty, and expense. Fortunately, so far as the fisheries are concerned, the various fishing firms in Alaska have their home stations and headquarters at San Francisco, or in Washington and Oregon, and can be reached with comparative ease. The instructions to the writer on his last investigation of the fisheries of the Pacific Coast in 1892 called for such statistical information regarding the Alaskan fisheries as could be procured without visiting that Territory. Each of the headquarter offices, as previously mentioned, was visited, and through the courtesy of the

proprietors and officers complete and accurate information was obtained directly from the books of every salmon cannery in Alaska, without one dollar of extra expense to the Government.

With the exception of the considerable quantities of fish caught and consumed in Alaska by the natives, the accompanying tables represent the entire food-fish fisheries of Alaska. The waters of that region, however, abound in many varieties of fine food-fish to which scarcely any attention has been given. San Francisco firms engaged in the cod fishery procure their catch on the extensive fishing banks just off the shores of Alaska, on which they have several stations. Their catch will be found in the statistical tables of California, and the two vessels in the same business from Washington will be credited to that State.

STATISTICS OF THE INDUSTRY.

The following tables show, for the years 1889 to 1892, inclusive, the extent of the fisheries of Alaska. The figures relate to persons employed; vessels, boats, apparatus, etc., used; and the quantity and value of the catch:

Persons employed in the fisheries of Alaska.

How employed.	1889.	1890.	1891.	1892.
In vessel fisheries	293	310	321	331
In shore fisheries	1,442	1,978	1,820	1,920
On shore, in canneries, etc.	2,497	2,668	2,806	1,533
Total	4,232	4,956	4,947	2,884

Vessels, boats, apparatus, shore property, and cash capital employed in Alaska fisheries.

Designation.	1889.		1890.		1891.		1892.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.
Vessels	33	\$433,000	36	\$504,500	39	\$532,500	40	\$461,000
Tonnage	6,710		6,960		6,923		8,623	
Outfit		26,400		29,900		32,950		33,400
Boats	723	131,175	793	138,200	800	148,175	431	63,675
Apparatus:								
Seines	165	45,225	124	55,425	127	55,000	69	27,025
Gill nets	478	51,050	510	55,650	590	60,850	243	28,750
Pound nets	20	17,200	24	20,200	23	21,000	16	13,200
Lines		3,350		5,650		5,350		4,050
Guns								500
Shore property		1,124,900		1,214,400		1,268,500		720,650
Cash capital		1,723,000		1,788,750		2,061,500		1,257,500
Total		2,558,900		3,612,675		4,185,825		2,600,650

Products of the fisheries of Alaska.

Species.	1889.		1890.		1891.		1892.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Cod	1,125,975	\$29,453	1,166,062	\$41,082	1,627,000	\$40,925	2,218,635	\$55,583
Herring	13,860,800	24,395	15,604,600	27,464	15,437,000	27,160	18,700,000	32,900
Salmon	60,917,220	1,600,498	58,444,820	1,620,281	68,971,040	2,681,552	43,221,500	1,219,973
Fur-seal pelts		1,677,478		5,207,750		2,217,466		4,107,573
Sea-otter pelts								2,220
Total	65,913,905	2,630,823	72,215,622	1,967,177	86,145,040	2,317,054	63,151,335	1,418,226

a Represents 102,617 skins.

b Represents 21,000 skins.

c Represents 13,528 skins.

d Represents 7,175 skins.

e Represents 18 skins.

THE SALMON INDUSTRY.

Brief notice has been made of the first canning of salmon in Alaska, of its success, and of the rush to this new region of those previously engaged in the business in other sections. The number of canneries in the Territory increased up to 1891, when the business reached high-water mark; the number of canneries in operation was 33 and the pack was 808,908 cases. This large amount of canned salmon, added to the customary yearly pack of the Columbia and other rivers, could have but one result, that of an overstocked market that at once necessitated a curtailing of operations. Salmon continued in great abundance in Alaskan waters, and it was apparent that the running of the 33 canneries to their full capacity would result in great pecuniary loss. Twenty-seven of the canning firms consequently decided to largely diminish expenses and reduce the amount of the pack in 1892, and in future years, so far as possible, to limit the production to the probable demand of the trade. This was accomplished by the firms mentioned pooling their business and closing 18 canneries that had run in 1891; the others, with those not entering the combine, made the number of factories operated in 1892 only 15. The pack in 1892 was 468,970 cases.

The principal salmon used in the canning business in Alaska are the small red-meated fish, locally known as red salmon, which has an average weight of 7 pounds, and the larger king or chinook salmon, which averages 30 pounds. In packing a case of 48 one-pound cans, the average number of red salmon required is 12, and of king salmon 2½. This is a much larger average than obtains at the canneries in the Pacific States, where the fish are less abundant and more valuable. The great abundance of these fish in Alaska results in the use of only the choicest parts and in the loss or waste of large quantities of products which otherwise would be utilized.

The extent of the salmon fishery of Alaska and of the canning and salting industry dependent thereon is given in the following tables. It appears that in 1892 2,601 persons were engaged in the industry, that \$2,184,303 was invested, that 37,534,100 pounds of salmon were utilized at the canneries in the preparation of 468,970 cases of canned fish and 55 barrels of salt salmon, the manufactured products having a value of \$1,970,110. For reasons already given, the business was much less extensive in 1892 than in any of the other years under consideration. The canneries not operated in the years shown represent a very large investment which does not appear in the statistics. Only the property actively employed is noticed.

The business of salting salmon, as a branch of the fishing industry independent of the salting done at the canneries, is quite important and is yearly increasing in extent. About a dozen firms, located in various parts of Alaska, engaged in salting salmon in 1892, utilizing 4,697,400 pounds of fresh fish and preparing 15,658 barrels of salt salmon, having a value of \$125,264. In the following year 5,871,600 pounds of raw material were consumed in the production of 19,572

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barrels of salt fish worth \$156,576. The persons employed in this branch of the salmon industry and the capital invested therein are included in the figures given in the preceding paragraph and in the tables which follow.

Persons employed in the salmon industry of Alaska.

Years.	On vessels.	In shore fisheries.	On shore.	Total.
1890.....	252	1,324	2,297	3,973
1891.....	279	1,533	2,568	4,380
1892.....	290	1,557	2,766	4,553
1893.....	288	880	1,433	2,601

Vessels, boats, apparatus, shore property, and cash capital employed in the salmon industry of Alaska.

Items.	1889.		1890.		1891.		1892.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.
Establishments.....	36	\$914,903	29	\$998,003	42	\$1,050,403	25	\$563,400
Cash capital.....		1,538,000		1,603,750		1,891,500		1,117,500
Vessels.....	28	\$413,000	31	\$488,000	24	\$518,500	24	\$441,500
Tonnage.....	6,552.43		6,701.80		6,785.24		8,421.48	
Boats.....	680	127,075	732	132,275	748	142,250	365	58,025
Seines.....	98	40,125	113	49,325	118	49,900	60	21,925
Gill nets.....	478	51,650	510	55,650	590	60,850	243	28,750
Trap nets.....	20	17,200	24	20,200	25	21,000	16	12,200
Total.....		3,101,653		3,348,103		3,734,403		2,184,303

a With outfit.

The vessels shown in the foregoing table are employed about the stations or are engaged in transporting supplies to the canneries and the prepared products to the markets. Many are of large size, and are among the finest vessels employed in the United States in connection with the fisheries. They are mostly steamers, but there are also ships, barks, and schooners. The largest sailing vessel is a ship of 1,158.30 tons, and the largest steamer has a tonnage of 449.64. These two vessels carry crews of 30 and 14 men, respectively. The aggregate tonnage of this fleet in 1892 was 8,421.48, the value of the vessels was \$441,000, and the crews numbered 288. The following table relates to the vessels employed in this capacity from 1889 to 1892, inclusive. A number of steam launches of less than 5 tons burden, used at the canneries, are classed as boats and do not appear in the table.

Vessels engaged in the salmon industry of Alaska.

Years and rigs.	No.	Net tonnage.	Value. (a)	No. of crew.	Years and rigs.	No.	Net tonnage.	Value. (b)	No. of crew.
1889—Steam.....	18	1,041.91	\$298,500	108	1891—Steam.....	25	1,290.95	\$378,000	148
Sail.....	10	5,510.51	144,500	148	Sail.....	9	5,474.29	140,500	142
Total.....	28	6,552.43	413,000	253	Total.....	34	6,765.24	518,500	290
1890—Steam.....	22	1,227.51	347,500	137	1892—Steam.....	23	1,082.68	315,500	129
Sail.....	9	5,474.29	140,500	142	Sail.....	11	7,358.85	126,000	159
Total.....	31	6,701.80	488,000	279	Total.....	34	8,421.48	441,500	288

a Include outfit.

Products of the salmon industry of Alaska.

Years.	Salmon canneries.						Salmon salteries.			
	Salmon utilised.		Salmon canned.		Salmon salted.		Salmon utilised.		Salmon salted.	
	Pounds.	Value.	Cases.	Value.	Bbls.	Value.	Pounds.	Value.	Bbls.	Value.
1889....	48,213,120	\$1,446,294	599,294	\$2,998,970	872	\$8,978	2,705,100	\$54,102	9,017	\$72,186
1890....	32,128,520	1,564,186	641,449	2,628,491	2,742	21,998	9,808,800	98,125	11,021	85,169
1891....	68,012,240	1,980,597	808,908	3,235,632	1,002	8,018	4,087,800	81,155	12,286	100,268
1892....	37,534,100	1,128,023	468,970	1,980,074	55	440	4,097,400	90,960	15,060	125,264
1893....	51,725,000	1,551,792	636,427	2,803,921	2,703	21,024	5,871,600	117,432	19,573	166,576

The names of the salmon-canning firms in Alaska and the location of the canneries are shown for four years in the following list, the cross-marks indicating the years in which the canneries were operated:

List of Alaskan salmon canneries operated in 1889, 1890, 1891, and 1892.

Name of cannery.	Location.	1889.	1890.	1891.	1892.
Astoria Packing Company.....	Kuiu Island.....		x	x	.....
Alaska Packing Company.....	Nushagak River.....	x	x	x	x
Arctic Packing Company.....	Uyak.....	x	x	x	.....
Do.....	Bristol Bay.....			x	.....
Do.....	Alitak.....	x	x	x	x
Do.....	Cook Inlet.....			x	.....
Alutian Island Fishing and Mining Company.....	Karluk.....	x	x	x	.....
Alaska Salmon Packing and Fur Company.....	Loring.....	x	x	x	x
Alaska Improvement Company.....	Kadiak.....	x	x	x	x
Aberdeen Packing Company.....	Wrangel.....	x	x	x	.....
Boston Fish and Trading Company.....	Yea Bay.....	x	x	x	x
Behring Sea Packing Company.....	Ugashik.....			x	.....
Bristol Bay Canning Company.....	Bristol Bay.....	x	x	x	x
Baranoff Packing Company.....	Baranoff Island.....	x	x	x	x
Central Alaska Company.....	Thin Point.....	x	x	x	.....
Chilkat Packing Company.....	Chilkat River.....	x	x	x	.....
Chilkat Canning Company.....	do.....	x	x	x	x
Chignik Bay Packing Company.....	Chignik Bay.....	x	x	x	x
G. W. Hume.....	Cook Inlet.....	.....	x	x	x
Hume Packing Company.....	Karluk.....	x	x	x	x
Karluk Packing Company.....	do.....	x	x	x	x
Kadiak Packing Company.....	do.....	x	x	x	.....
Do.....	Alitak.....		x		.....
Metlakatla Mission.....	Clarence Strait.....	.....		x	x
North Pacific Trading and Packing Company.....	Klawak.....	x	x	x	x
Northern Packing Company.....	Cook Inlet.....	x	x	x	.....
Nushagak Canning Company.....	Bristol Bay.....	x	x	x	.....
Pacific Packing Company.....	Copper River.....	x	x	x	.....
Pacific Steam Whaling Company.....	do.....	x	x	x	.....
Peninsular Trading and Fishing Company.....	do.....	x	x	x	.....
Pyramid Harbor Packing Company.....	Pyramid Harbor.....	x	x	x	x
Royal Packing Company.....	Afognak.....	x	x	x	.....
Russian-American Packing Company.....	do.....	x	x	x	.....
Thin Point Packing Company.....	Thin Point.....	x	x	x	.....
Total.....		28	30	33	15

Mr. A. B. Alexander, fishery expert on the United States Fish Commission steamer *Albatross*, makes the following remarks on the business of salting salmon in Alaska:

The demand for salt salmon is yearly increasing. A few years ago there was but little call for it, probably owing to the fact that little effort was made on the part of those engaged in the business to introduce it in the East. Seeing the absolute necessity of taking steps to place their products on the eastern market in order to increase the demand and establish a trade for salt-cured salmon, efforts have been pushed in that direction, and the encouragement met with has induced many who had not the means or desire to enter into the expensive business of canning salmon to establish salmon salteries in various parts of Alaska.

The amount of capital required to start on a small scale in this business is not

large. One or two boats fitted with drag seines, a cabin on shore for living quarters, a rough shed or fish house in which to dress and salt the fish and for performing such general work as may be required in a limited business of this kind, will suffice for all purposes. Many of the well-established salteries were first started in this manner and have since grown to be of considerable importance. Two or three men with only a small amount of capital, if they are fortunate in selecting a good locality where the run of salmon can be relied upon—for the success of the entire business depends upon the location—can, if they display the required amount of energy, build up a paying business. They of course must appreciate the fact that at least for seven months out of the year they must content themselves with being out off and isolated from civilization, but the class of men who seek a livelihood in this remote part of the world care little for social life, or, if so, the prospect which looms up before them for making money is fully equivalent to any hardships of this nature they may undergo.

Several small vessels manned by men of small means have, during the past few years, made annual voyages to Alaska, spent the fishing season there, and in the fall brought back the summer's catch. At first they temporarily located themselves by way of an experiment where it was thought to be a good position for carrying on the business. If the experiment proved a success, the next year greater preparations were made, and in this way from a small beginning quite a number of valuable plants have been established.

The greater part of the salmon put up at the salteries are caught in drag seines, although a few are taken in gill nets and traps, but at most places where salteries are situated the drag seine has been found to be the most profitable apparatus of capture, owing to the great number of smooth beaches where the fish can be easily taken. There are, however, numerous bays, channels, and straits in Alaska where the purse seine could be used to advantage. The reason why this style of net has not been adopted in places where it can be used is because the fishermen of the coast are not experienced in handling it. In 1893 a mackerel purse seine was for the first time used at Tongas Narrows, in southeastern Alaska. Previous to the introduction of this seine the drag seine had always been used. Mr. Clarke, one of the owners of the saltery established here, says that after a season's trial he has come to the conclusion that the purse seine is superior to the drag seine, and during the next season he intends to employ several of them. The secret of Mr. Clarke's success in fishing for salmon with a purse seine is in his knowledge of using it, which was gained by nearly twenty years' experience in the mackerel and other fisheries in New England. Seeing no reason why salmon could not be caught in the same manner as mackerel in places where the bottom and general surroundings were favorable, he sent East for enough twine to make a seine 150 fathoms long, 17 fathoms deep in the bunt, and 14 fathoms on the wings, the size of the twine being 9 and 12 thread. It will be observed that this seine is considerably deeper in proportion to its length than the ordinary mackerel seine. The reason for this extra depth is that salmon, when they find themselves surrounded by twine, will, like mackerel, dive, but, as a rule, they will only go down from 12 to 14 fathoms. By having the seine several fathoms deeper than they generally dive, a school, when once surrounded, is pretty sure of being caught. Mr. Clarke says he did not lose a single school during the summer.

The attempt to catch the salmon in this manner being only an experiment, everything connected with the new method, except the seine, was crude. A seine boat had to be built and the crew to man it drilled. The boat was manufactured on the spot by men connected with the fishing station.

Mr. Clarke finds this method a much more economical way of fishing than with drag seines. The bottom about Tongas Narrows is very rocky and drag seines are frequently torn to pieces. This involves a great deal of labor in keeping them in repair, and besides the expense amounts to considerable during the season. There being plenty of water here where the fishing is carried on, the purse seine never comes in contact with the bottom, and the hardest usage it gets is the natural wear and tear from handling.

Two purse seines have been used for several years at Yes Bay. One is 300 fathoms long and 17 fathoms deep in the bunt, and the other is about 100 fathoms long. The larger one is used more frequently and is set from a small steamer. The superintendent of the saltery at that point says it works all right when he can get men who know how to handle it. Purse seines have also been in use for two seasons at Metlakatla, and with very good success.

Employees at the salteries have, heretofore, been paid by the month, but a few salters during the past season gave their men a lay. Sixty dollars a month for white fishermen and \$1 a day for native help have been the established wages. It is fast becoming the custom to pay so much per barrel to white fishermen for all salmon caught. At all places where this system has been tried it has given satisfaction to both fishermen and owners. Ten cents a barrel is the lay received. In all fishing communities where fishing is performed on a lay much better results follow than where stipulated wages are given. The constant expectation of good catches stimulates the men with energy which wages have not the power to bring out. The fishermen know that what benefits the proprietors likewise helps them.

All barrels used for putting up salmon in southeastern Alaska are manufactured at the salteries. Suitable wood being abundant, they can be made at a reasonable price. During the winter months enough barrels are made to meet the demand for the coming season. A cooper is an indispensable person about a salmon saltery, for, besides performing his regular duties as a cooper, he is often called upon to assist in various mechanical jobs, and is paid by the piece, or so much per barrel—85 cents for making a whole barrel and 65 cents for a half barrel. At this price he can earn good wages, for he is under no expense for board.

It being the object of every man owning a saltery to enlarge on the plant and increase his business as rapidly as possible, several weeks of each year, before and after the fishing season, are spent in building wharves if needed, erecting buildings, and making such improvements as are required to keep a place of this kind in good order.

Many salmon salters have gained a firmer foothold in Alaska than the mere business of salting salmon would give them. They have branched out into general trade, and have stores well stocked with goods of all kinds. In this way they have drawn around them the neighboring tribes of Indians who are ever ready to buy and trade for such commodities as they require. The result of barter and trade with the Indians has been to annually fill the stores with large collections of furs. Bear, fox, and deer skins are chiefly dealt in, the most of which are shipped direct to San Francisco.

MANUFACTURE OF HERRING OIL AND GUANO.

According to the report of Mr. Paul S. Luttrell, special agent of the Treasury Department for the protection of the salmon fisheries of Alaska, a herring fishery of some magnitude was carried on in 1892 at Killisnoos, Alaska, by the Alaska Oil and Guano Company. While a considerable quantity of herring was preserved by salting, the chief feature of the business was the manufacture of oil and fertilizer. One hundred and twenty-two persons were employed in various capacities, of whom 93 were in the oil works and 29 on steamers engaged in fishing. Of the factory employes 47 were whites, 4 were Chinese, and 42 were natives. Four steamers, of 60, 42, 23, and 4 tons, respectively, were used. The value of the property and improvements was \$100,000.

During the year 93,000 barrels of herring were taken, from which the following were prepared: 500 half barrels of salt herring, 1,000 barrels of salt herring, 316,000 gallons of oil, 700 tons of guano. The oil, the price of which at the trade centers was 25 to 35 cents a gallon, had an aggregate value of \$85,000. The value of fertilizer was \$21,000, or \$30 a ton.

THE ATKKA MACKEREL.

The few persons who are familiar with this fish pronounce it one of the best of the numerous food-fishes found in the waters of Alaska. Its name is misleading in that the fish has no relation to the mackerel family and does not resemble it in looks or flavor. While found at numerous places in Alaskan waters, it has so far been observed most plentifully around the far-distant island of Attu. This island is the outer one in the Aleutian chain, and is the most western land belonging to the United States. It is so far west that it might, with almost equal propriety, be called east, being nearer the Asiatic shore than to any other mainland. San Francisco vessels engaged in trading or seal hunting have from time to time brought back larger or smaller quantities of salted Atka mackerel, usually taken in the vicinity of Attu. One of these vessels, the schooner *Rosa Sparks*, of 42.11 tons, with a crew of 20 men, which was engaged during the season of 1891 in fishing and sealing, returned with 148 seal skins and 324 barrels of Atka mackerel. The latter found a ready sale at \$15 a barrel. The captain of the vessel, Mr. S. L. Weatherbee, reports that his catch was made at Attu Island, and furnishes the following statements on the subject:

Atka mackerel are reported by the natives as remaining in the vicinity of Atka all winter, but do not reach Attu before April 10, from which date up to September they are found among the kelp in great abundance. Up to July they are very fat and in their best condition. The spawning season is in July, at which time they grow thin and poor. The fish are taken in 25 fathoms of water by jigging, no bait being required. Three or four hooks are fastened together and placed in a mold, into which lead, pewter, or some similar composition is run, welding the hooks together and leaving a shank that is polished up brightly to attract the fish; this also serves as a sinker. These lines and hooks are put down through the kelp, amidst which the fish are feeding. Being attracted by the bright metal, to which the hooks are attached, they swim around it in such numbers that their capture is easy by simply drawing the hooks up through them, and repeating the act so long as a catch is desired. From 8 to 10 barrels a day have been taken by two men in a single dory. Cod follow the Atka mackerel to this place to feed on them. The few Atka mackerel that have occasionally reached San Francisco are always eagerly sought after, and some fish have been sold at \$30 a barrel. Seines or nets of any kind could not be used to advantage, owing to the abundance of the large kelp among which the fish are always found.